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ABSTRACT

This compilation presents research completed in the areas of health, physical education, recreation, dance, and allied areas during 1990. The research is organized into two sections. The first, Index to Abstracts, arranges references under subject headings in alphabetical order. Instructions for using the index are given at the beginning of the section. The second, Theses Abstracts, includes master's and doctor's theses from institutions offering graduate programs in health, physical education, recreation, dance, and allied areas (institutions reporting are listed). Most references are accompanied by abstracts of the research, and all are numbered in alphabetical order according to institution. Names of institutional representatives submitting abstracts are indicated in parentheses after the names of the institutions, and names of major professors are in parentheses after each reference. Also included is a listing of abbreviations appearing in the abstracts. (LL)

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In Health, Physical Education, Recreation & Dance

Including International Sources

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VOLUME 33 - 1991 EDITION

COMPLETED RESEARCH

In Health, Physical Education, Recreation & Dance
Including International Sources

Covering Research Completed in 1990

Edited by CRAIG CHAMBERLIN
for the RESEARCH CONSORTIUM of the
AMERICAN ALLIANCE FOR HEALTH, PHYSICAL EDUCATION,
RECREATION AND DANCE.

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American Alliance for
Health, Physical Education,
Recreation and Dance
1900 Association Drive
Reston, Virginia 22091

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Purposes of the American Alliance for Health, Physical Education, Recreation and Dance

The American Alliance is an educational organization, structured for the purposes of supporting, encouraging, and providing assistance to member groups and their personnel throughout the nation as they seek to initiate, develop, and conduct programs in health, leisure, and movement-related activities for the enrichment of human life.

Alliance objectives include:

1. Professional growth and development—to support, encourage, and provide guidance in the development and conduct of programs in health, leisure, and movement-related activities which are based on the needs, interests, and inherent capacities of the individual in today's society.
2. Communication—to facilitate public and professional understanding and appreciation of the importance and value of health, leisure, and movement-related activities as they contribute toward human well-being.
3. Research—to encourage and facilitate research which will enrich the depth and scope of health, leisure, and movement-related activities; and to disseminate the findings to the profession and other interested and concerned publics.
4. Standards and guidelines—to further the continuous development and evaluation of standards within the profession for personnel and programs in health, leisure, and movement-related activities.
5. Public affairs—to coordinate and administer a planned program of professional, public, and governmental relations that will improve education in areas of health, leisure, and movement-related activities.
6. To conduct such other activities as shall be approved by the Board of Governors and the Alliance Assembly, provided that the Alliance shall not engage in any activity which would be inconsistent with the status of an educational and charitable organization as defined in Section 501(c)(3) of the Internal Revenue Code of 1954 or any successor provision thereto, and none of the said purposes shall at any time be deemed or construed to be purposes other than the public benefit purposes and objectives consistent with such educational and charitable status.

Bylaws, Article III

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INTRODUCTION

This compilation lists research completed in the areas of health, physical education, recreation, dance, and allied areas during 1990. It is arranged in two parts:

I. Index to Abstracts. In this section, references are arranged under the subject headings in alphabetical order. Instructions for using the index are given at the beginning of the section.

II. Theses Abstracts. These are master's and doctor's theses from institutions offering graduate programs in health, physical education, recreation, dance, and allied areas. Institutions reporting are listed beginning on page 167. Most references are accompanied by abstracts of the research, and all are numbered in alphabetical order according to institution. Names of institutional representatives sending in these abstracts are indicated in parentheses after the names of the institution; major professors are in parentheses after each reference.

Universities and colleges are encouraged to submit abstracts of theses completed at their institution for inclusion in the next issue of *Completed Research.* Material should be sent to Craig Chamberlin, Chairman of Theses Abstracts.

Craig Chamberlin
Editor, Completed Research

7

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ABBREVIATIONS APPEARING IN THESE ABSTRACTS

AAHPERD = American Alliance for Health, Physical Education, Recreation and Dance (abbreviate all familiar organizations, e.g., AAU, NCAA, etc.)
acd = academic or academically
ACSM = American College of Sport Medicine
AD = athletic director
admin = administration
AE = absolute error
ALT-PE = Academic Learning Time - Physical Education
amt = amount
anal = analysis or analyses
ANCOVA = analysis of covariance
ANOVA = analysis of variance
app = approximately
assoc = association or associated
ATPase = adenosine triphosphate
ave = average
BB = basketball
bf = body fat
BP = blood pressure
bpm = beats per minute
BTPS = body temperature pressure saturated
bw = body weight
C = centigrade, Celcius
CA = chronological age
CE = constant error
CG = center of gravity
chem = chemical
chol = cholesterol
CI = contextual interference
CO = county
CO_2 = carbon dioxide
coll = college or colleges
comm = community
curr = curriculum
CV = cardiovascular
DBP = diastolic blood pressure
° = degree
DEPT = department
dev = develop or developmental
diff = difference, differences, differentiate or difficult
DV = dependent variable
educ = education

EKG = electrocardiogram
ELE = elementary
EMG = electromyogram
EMR = educable mentally retarded
exp = experiment, experimental or experience
F = Fahrenheit, F ratio, female or females
fb = feedback
fed = federal
FEV_1 = forced expiratory volume
fit = fitness
gm = gram
govt = government
gp = group
GPA = grade point average
gr = group
grad = graduate, graduation
HC = handicapped
HE = health education, health
HR = heart rate
HS = high school
ht = height
IEMG = integrated electromyographic activity
insig = insignificance or insignificant
IQ = intelligence quotient
JC = junior college
JHS = junior high school(s)
JV = junior varsity
kg = kilogram
kg/m = kilogram per meter
kpm/min = kilopondmeter per minute
KR = knowledge of results
lab = laboratory
LD = learning disability
lit = literature
M = mean, male or males
MA = mental age
max = maximum or miximal
meas = measure, measurement
mf = motor fitness
MMR = mildly mentally retarded
mph = miles per hour
MR = mental retardation
MS = middle school
msec = millisecond(s)
MT = movement time

mvmt = movement
n = number (e.g., of Ss) all numbers in arabic form (e.g., 1 = one, 5 = five, 100 = one hundred)
N_2 = nitrogen
natl = national
NBA = National Basketball Association
neg = negative
no. = number (in text, e.g., the total no. of days . . .)
O_2 = oxygen
% = percent
P = probability ($p < .05$ = significance greater than .05 level; $p > .01$ = nonsignificance at the .01 level)
PE = physical education
PH = public health
pos = positive
PR = pulse rate
prog = program
psi = pounds per square inch
psych = Psychology, psychological
pt = point
PWC_{170} = physical work capacity, PWC (level of HR unspecified)
Q = cardiac output
r = correlation
REC = recreation
rehab = rehabilitation
rep = repetition or repetitions
ROM = range of motion
RPE = rate of perceived exertion
RPP = rate pressure product
rpm = revolutions/min
RT = reaction time
RV = residual lung volume
S = subject, S's = subject's (possessive); Ss = subjects
SBP = systolic blood pressure
sched = schedule
SD = standard deviation
SHS = senior high school(s)
sig = significant or significance
sq = square
st = state
stdnt = student
STPD = standard temperature pressure dry
SV = stroke volume

t = t-ratio
tchr = teacher
temp = temperature
TMR = trainable mentally retarded
TRT = total response time (RT + MT)
univ = university or universitites
US = United States
USSR = Union of Soviet Socialist Republics
VE = variable error
V_E = expired ventilation
VO_2 = oxygen consumption
vol = volume
V_T = tidal volume
wt = weight
x = times
x^2 = chi square
YMCA = Young Men's Christian Association
YMHA = Young Men's Hebrew Association
YWCA = Young Women's Christian Association

NOTE:

1. Measurements are abbreviated (without periods) such as:
   in = inch; sec = second; wk = week; hr = hour;
   m = meter; ml = milliliter; mm = millimeter;
   min = minute; mo = month; oz = ounce; yd = yard, ect.

2. Whenever possible, performance tests are abbreviated
   (eg., CPI = California Psychological Inventory;
   Cattell 16 PF = Cattell 16 Personality Factor
   Questionnaire; MMPI = Minnesota Multiphasic
   Personality Inventory)

3. U.S. Postal Service abbreviations are used for states
   (e.g., AL = Alabama)

INDEX TO ABSTRACTS

This index enables the reader to refer to the items of completed research listed in the Theses Abstracts section. Research topics are arranged in alphabetical order. The numbers following each topic correspond to the listings of completed research dealing with that topic.

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ARIZONA STATE UNIVERSITY (P.E. MARTIN)
TEMPE, ARIZONA

1. CLARK, J. S. Anabolic steroids and aggression in male weightlifters. MS in Exercise Science/Physical Education, 1991, 84 pp. (D.M. Landers)

This study documents the pattern of anabolic steroid use in 12 M wt lifters. The problem was to determine if levels of aggression were higher in this steroid gp compared to those of15 wt lifters who never used anabolic steroids. The comparison was made employing a 2x5 factorial design over 5 wks for meas of the Multiple Affect Adjective Check List and the Profile of Mood States. Athletes were compared one time using the Buss-Durkee Hostility Inventory. The aggression self-report meas used in this study were the aggression, anger-hostility, and irritability scales, respectively, on the Multiple Affect Adjective Check List, Profile of Mood States, and Buss-Durkee Hostility Inventory tests. All Ss were interviewed regarding their drug use/nonuse and their methods of wt training. The main finding was that both the steroid-user and nonuser groups had a similar sig increase in levels of aggression (Multiple Affect Adjective Check List) over the 5 wks. Therefore, there was no support for the hypothesis that there would be a sig diff between steroid users and nonusers in levels of aggression.

2. COBB L.E. The influence of goal setting of apparently healthy adults. MS in Exercise Science and Physical Education, 1991, 97 pp. (W. Stone)

Students from a comm coll fitness center prog (n = 130) volunteered for the study during fitness assessments for the fall semester, 1990. After stratification by letter grade versus credit only and motivational test scores from the Physical Activity Survey (PAS), Ss were randomized into treatment, placebo and control gps. The treatment gp received goal setting strategies and the placebo gp received self-selected health and fitness articles to read. The researcher communicated with the treatment and placebo gps every other wk by attaching information to their workout card. After the 16-wk semester, it was shown that there was no statistically sig diff in exercise adherence among any of the 3 gps. However, it was noted that the letter grade was a sig greater motivational factor ($p<.05$) than credit only. The PAS predicted the correct classification (adherer or dropout) for 72% of the Ss. Goal setting was not as effective as anticipated. The reason may be that students are not truly committed to these goals and/or a mediated approach does not allow for personal interaction which may be necessary at the start of the exercise prescription process and establishment of realistic goals. This study led to recommendations for improving adherence.

3. CULLIGAN, C.T. Exercise adherence: Effectiveness of a broad-based adult fitness program. MS in Exercise Science and Physical Education, 1991, 73 pp. (C. Corbin)

In some coll fitness courses students are not required to attend a formal class, but only need to accumulate a specified number of attendance hrs in a fitness facility. This study determined the extent to which prog participants followed the guidelines of proper exercise, and describes characteristics of adherers/dropouts and consistent participants. Data was from 522 adults who enrolled and participated in a 2 credit comm coll fitness class. Results revealed 277 (53%) of those who took part in the fitness course passed. Of those who participated 77 people or 14.7% exercised in the facility 2 or more times per wk on a consistent basis. Overall, nearly two thirds of those who participated were not active consistently enough to reap health or physical fitness benefits. A fitness assessment admin prior to beginning the prog showed adherers to be slightly superior in cv fitness and muscular strength. People who were most consistent in their exercise were found to be sig older. F in the high consistency category when compared to F in the low consistency gps, were found to be as heavy, possess similar bf, and be weaker in abdominal strength when they started the prog.

4. DULANEY, N.M. The effects of a flexibility training program on flexibility test scores in elementary school children. MS in Physical Education, 1991. (C.B. Corbin)

A study was conducted to determine if a flexibility training prog would improve performance on 2 flexibility tests for first, third, and fifth grade M and F (n = 228). The children were tested on the sit and reach test and the V-sit test 3 times during a 6 wk treatment period and once after a 6 wk latency period. The children, per grade level, were randomly assigned to 3 gps; a control gp and 2 treatment gps (stretching exercises twice a wk or 5 times a wk). A 3 x 3 x 4 ANOVA with repeated meas revealed that M and F, regardless of what grade or gp, sig ($p<.05$) improved on the sit and reach test over the 6 wk treatment period; however, their scores decreased on the V-sit test. After the 6 wk latency period sit and reach test scores for M and F decreased and V-sit test scores continued to worsen. The results suggest that the PE prog during the treatment period contributed to the improvement in sit and reach test performance but impaired V-sit test performance.

5. GLAZER, A.R. Effects of submaximal exercise on the mood of female bulimics. MS in Physical Education, 1991. (P. O'Connor)

6. JOGANICH, T.G. Influence of in-shoe orthotics on lower extremity function in cycling. 1991. (P.E. Martin)

Selected lower extremity kinematic and kinetic variables relating to knee pain were compared between cyclists with knee pain (P,m=9) and cyclists who were pain-free (PF, n=14). In addition, the effects of orthotics on these variables were studied by comparing P cyclist while riding with and without orthotics. Dependent variables were associated with pronation and included max values for absolute rearfoot pronation (MRP), rearfoot pronation relative to an anatomical neutral position (MRPN), medial knee position from the pedal center (MMKD), tibial internal rotation (MTROT), and internal torsional pedal load about an axis perpendicular to the pedal surface (MTOR). A three-dimensional anal was used to ascertain the rearfoot kinematic variables while an instrumented pedal was used to obtain the kinetic parameter. Results failed to demonstrate expected diff in rearfoot motion and related kinetics between P and PF cyclist. Orthotic treatment had a modest effect on rearfoot pronation and internal tibial rotation in a direction opposite to that expected. Despite these limited changes, 5 of 9 P Ss reported that knee pain was abated following 2 wks of cycling with the orthotics. It was concluded that: 1) PF and P cyclists do not exhibit lower extremity kinematic or kinetic diff, and 2) orthotic treatment has only a minor effect on these same descriptors.

7. LAMBIE, R.B. Factors affecting academic achievement of collegiate athletes. 1990. (R. Pangrazi)

This study examined the assoc between coll GPA and honor point totals with the variables of practice time, study hall time, no. of competitions, travel time, frequency of trips, and entrance exam (SAT and ACT) scores. GPA and honor pointmeans were observed and sorted by sport, major, class level, and ethnicity. Six hypotheses were posed for this study. The hypotheses proposed that for M grant-in-aid athletes at AZ State Univ no sig relationships existed between practice time, study hall time, no. of competitions, travel time, frequency of trips, or SAT/ACT scores and acd achievement as meas by GPA and honor point totals. The Ss of this study were 254 M grant-in-aid athletes who participated in inter-coll athletics at AZ State Univ during the 1985-86 acd year. A Statistical Prog for Social Sciences (SPSS) computer prog using observation of means, correlation coefficients, and multiple regression was used to anal the data. Entrance exam scores were found to be somewhat predictive of coll acd success. Increased practice time correlated with acd success, while increased study hall time correlated with acd deficiency. Frequency of trips was found to be a sig predictor of acd success only with the gp of Ss without SAT/ACT scores. No sig relationships were found between travel time and no. of competitions with acd achievement.

8. MUNKASY, B.A. The effects of a different arm swing onvertical jump and toe-touch jump performance. 1990. (R.N. Hinrichs)

This study investigated the effects of 2 types of arm swing (normal and whip) and the presence or absence of a toe-touch on the performance of a vertical jump. 22 HS aged F cheerleaders were videotaped at 60 Hz in the frontal plane while performing the following: 1. Normal approach vertical jump; 2. Whip approach vertical jump; 3. Normal approach toe-touch jump; 4. Whip approach toe-touch jump. The videotapes were digitized using a 14 segment mathematical model of the human body. A 2 factor repeated meas ANOVA was conducted to determine diff between the 4 jumps for takeoff, landing, and flight ht, ave mediolateral ankle velocity at touchdown, and the arms' change in momentum over 5 jump phases. Momentum change of the body center of mass attributed to the legs, head and trunk, and arms was determined utilizing a relative segmental momentum technique. A 2 factor MANOVA was conducted to determine diff between the vertical velocity of the ankles and body center of mass for the 4 jump conditions. It was found that the diff approach utilized (a whip approach) slightly decreased flight ht with respect to the normal approach. Preparation for mvmt (a toe-touch jump) decreased flight ht and lowered landing ht as compared to a vertical jump. Even though flight ht was greater when the Ss did a vertical jump, their time in the air was greater when performing a toe-touch jump. This was explained by a lower arm position and body center of mass at touchdown. It was established that a toe-touch jump landing created a greater resultant ankle velocity at touchdown. Breaking the jump approach into 5 phases revealed that the arms and trunk contributed considerably to the countermovement momentum change. The legs were most responsible for momentum changes during the propulsive phase. Preparation for a toe-touch increased leg contribution to momentum change. However, toe-touch preparation negatively affected flight ht by decreasing trunk and arm contribution. Even though the arms' and legs' contribution to change in momentum was increased, the whip approach curtailed trunk contribution to such a great extent that flight ht was less.

9. MUNRO, R. Anabolic steroids: Knowledge, attitude, and behavior in college age students. MS in Exercise Science andPhysical Education, 1991, 107 pp. (C. Corbin)

The problem was to examine knowledge, attitude, and behavior concerning anabolic steroids (AS) in coll age students. The perceived importance of strength, sport competence, body attractiveness, and conditioning was also meas. Ss were selected from general educ courses taught at a major Southwestern univ. Instrumentation consisted of a categorical response questionnaire on AS and the Fox Perceived Importance Scale (Fox, 1987). ANOVA indicated that neither knowledge nor attitude diff existed among Ss based on the type of facility used.

M who used wt room facilities were found to have sig diff behaviors from M who did not use the wt room. M wt room users were found to have had more contact with AS use behavior. This included both personal use and knowing someone who used steroids. M had sig higher behavior scores than F. Typically M and F perceived attractiveness, strength, sport, and conditioning to be important. M who used wt rooms were especially likely to perceive strength, sport, and attractiveness to be important. Similar results were found for F with attractiveness and sport. It was concluded wt room users are more prone to exhibit AS behaviors and perceive strength, sport, attractiveness, and conditioning to be important.

10. STREFF, L.L. A determination of member satisfaction at three different types of fitness centers. MS in Physical Education, 1991, 160 pp. (W. Stone)

The problem was to determine the factors that contribute to member satisfaction at 3 types of multipurpose fitness facilities which include a private HE club, a third-generation fitness facility, and a comm coll fitness center. Members' reasons for exercising and demographic characteristics were also determined. 3 fitness centers were randomly chosen from these categories. 100 members were randomly selected to complete a questionnaire. The survey was mailed to these members to determine demographic profiles, satisfaction with the facility, and members' reasons for exercising. The results indicated a sig diff among the 3 facilities for the following characteristics: response rate by gender, age, marital status, occupational status, type of occupation, total household income, and educ. Sig diff were also found with regard to members' overall satisfaction with the facility's services, prog, and personnel. The results showed that the respondents from the comm coll fitness center are the "most" satisfied, the respondents from the private HE club are the "least" satisfied and the respondents from the third-generation fitness facility are "in between" these 2 gps with regard to level of satisfaction with the club. No sig diff were found among the 3 clubs with regard to respondents' reasons for exercising.

11. VAUGHAN, N.R. A comparison between stairclimbing and graded walking in peripheral vascular occlusive disease. MS in Exercise Science and Physical Education, 1991, 132 pp. (C.X. Bryant)

This investigation was designed to determine if stairclimbing (S) could be used successfully to evaluate peripheral vascular occlusive disease (PVOD) severity. 10 PVOD patients with stable claudication symptoms were recruited to perform 2 progressive S tests, 1 progressive graded treadmill (G) walking test, a range of 5 single intensity S tests, and a range of 5 single intensity G tests. The S and G protocols were designed to be of comparable energy expenditure requirements as verified by meas VO2. Both claudication time variables and hemodynamic meas were used as indices of disease severity and as a basis for comparison between the modes. Statistical comparisons using intraclass correlation coefficients, dependent t-tests and repeated meas ANOVAs revealed that claudication times were reliable during S and similar to those during G. Also, all hemodynamic meas were reliable during S. Brachial BP were the only hemodynamic meas which were sig diff between S and G with the lowest values observed during S. It was concluded that S could be used successfully to assess severity of disease in PVOD patients and that it may provide advantages over G as the mode of assessment.

AUBURN UNIVERSITY **(M.G. FISCHMAN)**
AUBURN, ALABAMA

12. STEPHENS, M.H. Effects of resistance training on changes in strength, muscularity and subcutaneous fat in young and middle-age women. MS in Physical Education, 1990,170 pp. (G. D. Wilson)

The effects of 16 wks of resistance training were evaluated in 5 young (Y = 19.0 yrs) and 25 middle-age (MA = 45.3 yrs) women. Comparisons were performed between anthropometric and ultrasonographic meas of changes in muscularity and subcutaneous fat. Sig increases in strength were demonstrated by Y and MA, respectively, on bench press (34% and 41%), and squat (40% and 86%). In the squat, MA gained sig more strength during the first 8 weeks. Muscle hypertrophy occurred in Y and MA as evidenced by sig increases in ultrasonographic meas of muscle thickness of the posterior upper arm (41% and 14%), and anterior thigh (8% and 10%). Assessment of muscle hypertrophy by circumference and net circumference meas indicated sig increases, although the relative magnitude was less than ultrasonographic meas indicated. Evaluation of strength and muscularity changes indicated that diff neuromuscular adaptations may have occurred between the gps. Subcutaneous fat thickness was not changed following training as evidenced by ultrasonographic meas. However, upper arm subcutaneous fat thickness as meas by skinfold calipers decreased (Y = 5%; MA = 17%). Diff between skinfold and ultrasonographic meas note the limitations of skinfolds for assessing relative changes in subcutaneous fat.

BALL STATE UNIVERSITY **(S.J. PARK)**
MUNCIE, INDIANA

13. BAILEY, C.D. An analysis of the rebound characteristics of wooden and aluminum baseball bats. MA in Physical Education, 1991, 28 pp. (G. Gehlsen)

The purpose of this study was to determine the rebound characteristics of wooden baseball bats and aluminum baseball bats. Prior to testing, the point of percussion was determined. The bat being tested was suspended by a string that was attached to a small eye screw placed into the end of the knob of the bat. The string attached to the end of the bat was then secured to a point above an open doorway. The bat was placed into a side-by-side swinging motion from a fixed position. 10 completed swings (from the fixed position back to the fixed position) were timed with a stop watch. This swinging and timing process was repeated 5 times with each bat. This data was then placed into the formulas used by Berry, Messier, Ruhmann, and Seyrich (1987) to determine the point of percussion for each bat. Each bat (33 in wooden, .95 kg; 33 in aluminum, .90 kg; 34 in wooden, .95 kg; and 34 in aluminum, .89 kg, was tested by dropping baseballs from a distance of app 170 cm above the bat onto the point of percussion. The baseballs were placed in a clamping devise that was located over a circular hole in a piece of wood. The handle of the clamping devise was pulled and the baseball was released. 3 baseballs were dropped on each bat, and the rebound distance was meas by a Locam camera. The velocity of the ball before and after contact was meas. An accelerometer was also used to determine the vibration effects of a baseball hitting a bat from a low elevation. The accelerometer was placed under the barrel of the bat. 3 baseballs were dropped (using the same clamping devise) on each bat from a distance of app 9 cm above the bat. The vibration effects were meas electronically. An ANOVA was computed between the velocities of the baseballs as they approached and then rebounded off the baseball bats. The data revealed there were no sig diff between the drop velocities. However, there were sig diff between the up velocities (velocity of the ball after it rebounded off of the bat). There were sig diff between the velocities of the: aluminum 34 vs wooden 34, aluminum 34 vs aluminum 33, and aluminum 34 vs wooden 33.

14. CHOI, J. Modeling the perceptual component of a coincident-timing skill: Is there an optimal number of model presentations? MA in Physical Education, 1991, 26 pp. (D. Weeks)

The purpose of this study was to investigate the effect of variations in the amount of perceptual modeling diff gps received prior to actively practicing a coincident-timing task. Specifically, Ss (n=44) were compared under 4 modeling conditions consisting of no, 1, 5, and 10 perceptual modeling trials admin by having Ss passively view stimulus lights on a Bassin anticipation runway prior to active performance. Following modeling exp, each gp performed right-to-left arm motion coincident with the illumination of the runway lights. Results indicated that perceptual modeling, whether 1, 5, or 10 trials, resulted in sig less absolute constant timing error in performance than no modeling during a 20 trial acquisition phase and an 8 trial no-KR retention phase. Additionally, even though the 1 perceptual modeling gp exp only a single pre-practice exp with the stimulus, this gp's performance was no diff from the gps receiving more modeling exp. Thus, it was concluded that the relevant information needed to enhance performance could be obtained with one pre-practice exp. More perceptual modeling was redundant, therefore unnecessary.

15. FREEMAN, A.E. The effects of touch on team cohesion. MA in Physical Education, 1991, 44 pp. (J. Reno)

The purpose of this study was to examine the effects of touching on F soccer players at Earlham Coll, an NCAA Division III coll in Richmond, IN. All 21 players of the 1990 team were asked to participate in this study. The study included the completion of the Group Environment Questionnaire. 2 gps of 10 Ss played Pictionary and then took the GEQ on Day 1. On Day 2, 2 confederates from Gp B spontaneously touched the members of the gp throughout the session of Pictionary while the members of Gp A followed the same procedure as Day 1. Both gps followed the Day 2 session with filling out another GEQ. A one way ANOVA was run on the comparison of the exp and control gps on Day 2 resulting in no sig diff between the 2 gps. A second one way ANOVA was run with dependent meas as the Day 2-minus-Day 1 diff scores. Again no sig diff was demonstrated. The means were computed for each of the anal indicating that the exp gp rated themselves as slightly more cohesive when compared with the control gp. Their cohesiveness also increased moderately the second day. This study suggests that there is a possibility for these results to become sig if certain methodological changes are made.

16. IAK, K.A. The relationships between perceived parental pressure and the levels of self esteem and competitive anxiety in age-group swimmers. MA in Physical Education, 1991, 51 pp. (A. Ignico)

30 age-gp swimmers attending Ball State Univ summer swim camps in July were selected randomly from 78 informed consent letters. 3 boys and 3 girls in each age gp (9-13 yrs) completed a 3 part questionnaire. The first part of the questionnaire was the Sport Competition Anxiety Test. The second part was the Anal of Sig Adult Influences. The final part was the Self Esteem Questionnaire. The purpose of this study was to examine the relationship between perceived parental pressure and the levels of self esteem and competitive anxiety. After data was collected, Pearson Product-Moment Correlations were completed. It was determined that there is no sig relationship between parental pressure and either of the other 2 variables. One of the problems with this study is that it utilized a small sample from one camp in one region of the country. It is suggested that further research in the area of youth sport and parental influence be done with a larger, and more varied sample of young athletes.

17. HANG, H-Y. The effect of various lifting intensities in release of human growth hormone. MA in Physical Education, 1990, 56 pp.

This study was designed to meas the effect of various intensities of leg-press exercise and squat exercise on hGH release. Young, 24 ± .7 yrs of age, M lifters (n=3) served as Ss for this study. After a 1 RM was established on the wt sled and squat rack they completed a 3 RM, 10 RM, or 25 RM workout using a 3 set protocol. Each workout (3, 10, or 25 RM) was performed on a separate day and leg-press and squat exercises were separated by 2 wks. Blood was taken from an antecubital vein prior to exercise (pre-exercise, after warm-up, and post-exercise 4, 8, 16 min). The serum was meas for hGH levels. The results indicate that 1) high intensity exercise of a short duration will not elicit a hGH response indicating that exercise duration is more important than exercise intensity, 2) the hGH output, in part, depends on exercise intensity when exercise duration is sufficient to elicit hGH response, and 3) the increased lactic acid during resistance exercise did not relate to hGH levels.

18. LIU, Z. A cross-cultural analysis of children's attitudes toward physical activity and patterns of participation. MA in Physical Education, 1990, 73 pp.

The purpose of this study was to examine attitudes toward physical activity and patterns of involvement among Chinese and American children. Participants were children in grades 3 and 8 in Central China (n=170) and in the Midwestern US (n=100). Data were obtained by admin a revised inventory for children's attitudes toward physical activity (CATPA), a new CATPA inventory appropriate for grade 3, and a physical activity questionnaire. Separate 2 (Country) X 2 (Gender) X 2 (Age) MANOVAS, follow-up ANOVAs and descriptive statistics were employed to anal the data. Unlike previous findings, this study indicated that Chinese participants have more pos attitudes toward physical activity while American participants reported more involvement in physical activity. Age and gender diff in attitudes toward physical activity were also found with younger children and girls expressing more pos attitudes. Marked gender and nationality diff in both participation patterns and physical activity preferences were also evident. The results of the present study supported previous findings that attitude is a function of age and gender.

19. MALONE, K.N. The effect of body position on spinal cord injured swimmers. MA in Physical Education, 1990, 81 pp.

The purpose of this study was to anal specific biomechanical and physiological variables in disabled swimmers performing a functional backcrawl. The effect of selectively placed flotation devices on the body position, exercise HR, and perceived exertion of the swimmer was compared to swimming with no flotation. The participants in the study included 8 able-bodied M 21.5 (±2.51) yrs. and 4 disabled M 29.25 (±2.22) yrs. Each S performed the backcrawl for 3 consecutive lengths of a 25 m pool under 4 separate trial conditions: free swimming, swimming with the hip flotation device, the knee flotation device, and the ankle flotation device. Immediately following each trial a post-exercise HR was taken and the S was asked to rate perceived exertion. Full recovery was allowed after each trial. Trials were video taped and digitized to determine the mean angles at the neck, trunk, hip, and knee during one complete stroke cycle. The investigator recognizes that this generalization presents the possibility for a bias in the data and that further study would warrant the utilization of the diff phases of the stroke for determination of body angles. The results of the study demonstrated that a sig diff did exist between the disabled and able-bodied hip angle during free swimming. Within the disabled gp, no sig diff were evident when comparing the body angles during free swimming to the same angles while swimming with each of the flotation devices. Correlation between HR and RPE for all Ss (n=12) were sig in each of the 4 trial conditions.

20. PELLETT, H.A.H. The relationship between health-related physical fitness levels and academic achievement in elementary students. MA in Physical Education, 1990, 40 pp. (A. Ignico)

The purpose of this study was to investigate the relationship between health-related fitness levels and acd achievement in ELE school children. A sample of 105 ELE students in grades 4 and 5 were tested. The study consisted of 64 M and 41 F in both grades. CA Achievement Test scores of reading, language, and math were selected to reflect the acd achievement variables. The AAHPERD Physical Best Test was used to meas physical fitness. Test items included body comp (sum of the tricep and calf skinfolds), one-mile walk/run, sit-ups, and sit and reach. A SAS Canonical Correlation Anal was used to examine the relationship between health-related physical fitness and acd achievement. Means and SD were calculated for both genders, and F and M alone. Results indicated that there was no sig relationship ($\underline{p} > .05$) between health-related physical fitness levels and acd achievement in fourth- and fifth-grade students.

21. PELLETT, T.L. Visual pretraining effects on coincident timing skill acquisition and retention. MA in Physical Education, 1990, 160 pp. (D. Weeks)

The purpose of this study was to determine the effects of visual pretraining on coincident-timing skill acquisition and retention. 2 gps received varied visual pretraining exp by viewing 3 diff stimulus velocities on a Bassin Anticipation Timer runway before being transferred to active timing performances (acquisition, and retention phases) with the same stimulus velocities (12.8, 17.6, 22.4 k/h). A third gp served as a control (NP gp) and received no pretraining exp. The blocked pretraining gp (BP) received visual pretraining at all stimulus velocities before being transferred to the active condition. The paired pretraining-acquisition gp (PPA) also received pretraining exp at the same 3 stimulus velocities. However, active performance trials immediately followed pretraining at each stimulus velocity. The results demonstrated that the PPA gp performed with less absolute timing error and was less variable in traversing the second half of the mvmt during the acquisition phase. However, these results were not apparent during the retention phase. Overall, it was concluded that a trend existed for visual pretraining to be effective in fostering coincident-timing skill acquisition.

22. TEPE, B. The effects of physical education program on physical fitness of middle school students. MA in Physical Education, 1991, 44 pp. (G. Gehlsen)

The purpose of this study was to determine the effects of a PE prog on the physical fitness of middle school students. The Ss were 199 M and F seventh and eighth graders from Northside Middle School. A pre and post test research design was employed to determine the effects of a PE prog on middle school students. The battery of tests included sit ups, shuttle run, one mile run/walk, pull ups or flexed arm hang, and sit and reach. The Ss were involved in a PE prog throughout the school yr. The Ss were then reevaluated at the end of the school yr. Statistical anal indicated a slight improvement in most areas however, no statistically sig values were identified.

23. WILSON, J.E. An analysis of visual reaction time, dynamic reaction activity and depth perception of males wearing color eye shields. MA in Physical Education, 1991, 64 pp. (G. Gehlsen)

The purpose of this study was to determine the effects of wearing colored eye shields on visual RT, dynamic reaction activity, and depth perception. The Ss were 20 M coll football players. The Lafayette's 63035 Visual CRT, the Bassin Anticipation Timer 50575, and the Lafayette 1702 (14012) Depth Perception Apparatus were used to collect the data. Interpretation of the data was completed with the aid of Statistical Package for the Social Sciences (SPSS) computer prog. ANOVA with repeated meas was used for the statistical anal. Based on the findings of this study, no sig change in RT, dynamic reaction activity, and depth perception were found due to colored eye shields. However, sig diff in RT and dynamic reaction activity were noted with day to day variation.

CALIFORNIA STATE UNIVERSITY (D. YOUNG)
LONG BEACH, CALIFORNIA

24. MAERO, R.B. The effect of variability of practice in children with learning disabilities. MA in Physical Education, 1990

This study compared the effect of variable and constant practice on the acquisition, retention, and transfer of a rolling task in 9 to 13 yr old children with learning disabilities. The Bruininks-Oseretsky Test of Motor Proficiency (short form) was admin to 34 Ss who were randomly assigned to the constant practice, blocked variable practice, or serial variable practice group. Ss rolled balls knocking down 10 plastic bowling pins set 30 ft from a line. Acquisition consisted of 60 trials. 15 trials were performed for the retention and transfer tests. No sig diff were found in acquisition using a 3 (type of practice) X 4 (blocks of 15 trials) two-way ANOVA with repeated meas. The anal for the retention and transfer phases was a 3 (type of practice) X 2 (2-day and 5-week) two-way ANOVA with repeated meas. No sig diff were found.

CENTRAL MISSOURI STATE UNIVERSITY (M. LYON)
WARRENSBURG, MISSOURI

25. REVEN, A.L A study to investigate the psycho-social reasons for the termination of organized sport participation as related to age. MS in Physical Education, 1990, 59 pp. (R. Tompkins)

This study examined the relationship between the age children began organized sports, the age of those that terminated involvement in those sports, and the psycho-social reasons for termination. Questionnaires were completed by 107 randomly selected Warrensburg HS students, Warrensburg, MO. Ss ranged in age from 14 to 18 and had participated in at least one organized sport. Responses, reported in percentage form, indicated that children increase their chances of continuing organized sport involvement when they begin participation on or after the age 11. Continuation of participation in sports is aided by enjoyment of the exp. Cessation of participation is caused by conflict of interests and lack of interest.

CLEVELAND STATE UNIVERSITY (D. HURWITZ)
CLEVELAND, OHIO

26. PROKOP, M.A. Success rates and other variables in smoking cessation. MEd in Physical Education, 1989.

This study was designed to determine the rate of success in quitting smoking for those participants who had attended a particular smoking cessation prog called Smoke Stoppers. This study investigated the validity of the claim made by Smoke Stoppers' proponents that participants exp a higher than ave success rate of 63% or better. According to the Standards for Evaluation of Group Smoking Cessation Prog the definition of success is abstention from smoking tobacco in any form for at least 1 yr after prog completion. This study determined success rates at diff points from1-3 yrs post prog completion and looked at diff variables for a total population of 275 participants. A total of 680 questionnaires were sent out to Smoke Stoppers prog participants. The rate of return mail was 32% (N=218). Information was coded and anal using descriptive statistics. The success rate (excluding non-respondents) was 55%, thus the major research question was not supported. When non-respondents were included in the data the success rate was found to be even lower at 23%. Additional findings reflected that: 1) success rates were higher in the comm than in the corporate setting, 2) there was no diff in success rates by gender or educ level, 3) greater than 50% of those who had stopped smoking had gained wt, 4) the majority of wt was gained within the first 3 mos, 5) there was an inverse relationship between wt gain and exercise, and 6) those who had quit smoking reported to be more confident of their success at the time of quitting. Implications for future research are discussed.

COLUMBIA UNIVERSITY (W.G. ANDERSON)
NEW YORK, NEW YORK

27. CARR, J.H. The effect of arm movement on the biomechanics of standing up. EdD in Physical Education, 1991 (A.M. Gentile, J. Higgins)

The purpose of this study was to examine the intersegmental relationships between upper and lower limbs in standing up. 6 Ss were videotaped while standing up from a height-adjustable seat, with both feet on a force platform. The extent of upper limb mvmt was varied, Ss standing up under 3 arm mvmt conditions: arm mvmt occurring naturally (preferred condition); arm mvmt restricted (restricted condition); arm mvmt augmented (pointing). X Y coordinate datawere extracted from the videotaped trials, filtered and anal to determine segmental and total body kinematics. Data from force platform together with coordinate data were used to calculate joint mvmts of the lower limbs and overall support mvmt of force. Since standing up is a total body mvmt involving many segments, it is interesting that there was some evidence for a linkage between arm mvmt and lower limb mvmt, in that the onset of shoulder flexion and lower limb extension were found to coincide when pointing was combined with standing up compared with the restricted condition. The extent of arm mvmt also affected the overall length of time spent generating force equal to 2 or 3 times greater than body mass. Force was produced over a longer period of time when arm mvmt was restricted compared with the preferred arm condition. Both the horizontal distance moved by the center of body mass and its horizontal and vertical linear velocity increased with the extent of arm mvmt. The vertical projection of the center of body mass had not moved as far forward at thighs-off in the restricted condition suggesting that Ss were less likely to project their CBM as far forward as when arms were free to move. That there was some cost to balance in the restricted condition was seen in the high coefficient of variation in angular displacement at the ankle joint. The results suggest that the upper limbs not only play a role in balancing the total body as it is translated from one base of support to another but also facilitate lower limb propulsion.

28. CRUZ, L.M. A multi-case study of beginning physical education teachers at the elementary level. EdD in Movement Sciences and Education, 1991, 339 pp. (W.G. Anderson)

This was a naturalistic study which investigated and described the exp of 4 beginning teachers who had recently graduated from teacher preparation prog with a specialty in PE. Each teacher had secured their first teaching position as physical educators at the ELE level (N = 6). Data was collected during their first semester of teaching via standard qualitative research methods: formal and informal interviews, observations, and document anal. 4 case narratives were written according to emergent themes unique to each teacher. A cross case anal was conducted in which common threads, as well as diff among cases were discussed. The results indicated that what novice teachers learn and do in their preservice exp is not necessarily what they encounter in the "real" world of teaching. The 4 teachers in this study began the semester with certain expectations only to find that due to a variety of factors, teaching and their role as physical educators was not exactly as they had anticipated.

29. HELION, J.G. A critical incident investigation of positively and negatively perceived cooperating teacher behaviors in the physical education student teaching experience. EdD in Physical Education, 1990, 146 pp. (W.G. Anderson)

This study used the Critical Incident Technique to collect pos and neg perceived behaviors (N = 507) from PE student teachers about their cooperating teachers during their student teaching exp. The data was inductively anal and categorized. Anal of received incidents resulted in division of the data into 4 major categories, 15 subcategories and 99 individual behaviors. Student teachers in this study, cited Nuturing Behaviors most often, followed by Mentoring Behaviors, Accepting Behaviors and Modeling Behaviors. The student teacher emerges as a person wanting acceptance, security, trust and confidence building from the cooperating teacher. They view most cooperating teacher mentoring behaviors pos as well as other teaching and management behaviors modeled by the cooperating teacher. Most perceived behaviors were in the categories dealing with nurturing; trust and security dev and confidence building. The cooperating teacher is shown to be in a position to have a definite effect upon the shaping of student teacher behaviors and beliefs with regard to the profession of teaching and the field of PE.

30. PETERSEN, S.C. A multi-case study of instructional sequencing in elementary school physical education. EdD in Movement Sciences and Education, 1991, 331 pp. (W.G. Anderson)

This was a naturalistic study which investigated the sequencing and progression of content within a class meeting, within a unit, and from grade level to grade level in grades K - 4. Teachers' rationales for sequencing decisions were sought to gain insight as to why they made various decisions regarding content selection and its order. Standard qualitative research methods were used to collect data. Observations, field notes, formal and informal interviews, and document anal were employed. A "purposeful sample" of 4 teachers was selected and classes from at least 3 diff grade levels which were taught by the same teacher were observed in each case. The exp of each grade level were described as they progressed through a single unit of instruction. Data were anal inductively and reported in a case study format with a cross case anal used to compare similarities and diff between cases and to the Recommended Practices for sequencing instruction contained in the lit. Results indicated that sequencing decisions are extremely complex and that teachers' decision making in this regard is far more comprehensive in scope than the lit suggests.

FLORIDA STATE UNIVERSITY (C. BEELER)
TALLAHASSEE, FLORIDA

31. BRADLE, T.A. Levels of park satisfaction among Florida State Park visitors and their relationships to selected visitor characteristics. MS in Leisure Services and Studies, 1991, 70 pp. (C. Beeler)

The general problem was to determine levels of park satisfaction among FL State Park visitors and their relationships to selected visitor characteristics. Data were obtained from 2,027 FL State Park visitors among 16 selected FL State Parks in 1989 and 1990. There were 8 hypotheses tested, 3 of which were found to be sig using the ANOVA test. Sig diff were found in park satisfaction based upon the Primary Reputational Feature (PRF) of each park and season of the park visit. The lowest M satisfaction score (by PRF) was found at parks in the coastal/beach category and the highest was found at parks in the spring category. Furthermore, the lowest M satisfaction score (by season) was found in the Summer 1990 category and the highest was found in the Fall 1990 category. Finally, there was sig diff found between FL residents and non-residents. FL residents were found to have a higher M satisfaction score than non-residents. Despite the sig diff found from the 3 hypotheses tested, the means among all categories were within the "satisfied" category of the visitors' overall park exp. The author also made several recommendations based on the conclusions of the study.

IDAHO STATE UNIVERSITY (J. GIRVAN)
POCATELLO, IDAHO

32. GIRVAN, G.A. The development of an instrument to assess how risk management practices are addressed in intercollegiate athletic programs. MA in Health Education, 1990.

This study dev an instrument to examine the manner in which risk management practices were addressed by intercoll athletic prog. Initially, a 49 item questionnaire was constructed, that included risk management practices in the areas of supervision and instruction, facilities and equipment, medical care, travel and transportation, insurance, and due process. The questionnaire was then mailed to 9 nationally recognized experts in sports law. Utilizing their responses a 44 item questionnaire, including a demographic section, was dev. Practices not applicable were eliminated and items referring to practices that should be addressed formally (documented in a form of writing) were retained. The instrument was piloted by 12 randomly chosen intercoll athletic prog from 4 selected conferences representing diff athletic assoc. Data collected from the sample pilot prog resulted in modification in wording and construction of the demographic section. No further changes in the risk management practices section were required. Frequency data were collected on each risk management practice to determine the no. of the respondents who addressed each practice formally or informally. Response categories were also included for those respondents who did not address a practice or deemed it not applicable. The 99.5% response rate to the 440 possible items, the variety of responses, and the representation of the intercoll prog in various sizes of schools determined that the instrument was applicable for assessing how risk management practices were being addressed by intercoll athletic prog.

INDIANA UNIVERSITY (D. L. GALLAHUE)
BLOOMINGTON, INDIANA

33. BAIR, S.P. The history and development of girls' high school sport in the state of Indiana. PED in Athletic Administration, 1991, 264 pp. (M.L. Remley)

The purpose of this study was to chronologically document and depict the emergence of girls' HS sport in the state of IN, focusing on the 20th century. The study was divided into 5 main time frames: 1900 to 1931, 1931-1940, 1940-1960, 1960-1972, and 1972-1990, representing major shifts in the structure and governance of HS girls' sport in IN. The lit of girls' and women's sports, primary and secondary documents pertaining to IN girls' sports and archival materials from the IN HS Athletic Association (IHSAA) and the IN League of HS Girls' Athletic Associations (ILHSGAA) were examined. Personal interviews were conducted with ILHSGAA sponsors, school admin, coll personnel, and female participants in intramural and interscholastic sports. Information was anal for the purpose of answering the following questions concerning the dev of girls' HS sport in IN: Chronology of the dev of girls' sports within each of the time frames identified? Organizations within and outside of the state affecting girls' sport? Contributions of leaders who played prominent roles in developing girls' sport? Similarities and diff in philosophy, structure, and program development of the ILHSGAA and the IHSAA?

34. BENHAM, T.B. The effectiveness of the AAU Developmental Physical Fitness Curricular Module in promoting physical fitness, fitness knowledge and attitudes toward physical activity in fifth and seventh grade children. DPE in Physical Education, 1990.

The problem of this study was to test the viability of a curricular module that would provide teachers with a unique instructional package for promoting youth fitness and to assess its effectiveness in the middle school population. The study included two phases: (1) the dev and subsequent assessment of the AAU Developmental Physical Fitness Curricular Module, and (2) the incorporation of the module into 13 public schools' PE prog. Pre- and post-test meas were taken on the 4 required AAU test events, the Children's Attitudes Toward Physical Activity Inventory, and a fitness knowledge test. A separate MANOVA test of mean diff was used to test for sig diff. Interview and questionnaire data revealed that the Curricular Module was a viable instructional package that could easily be implemented in a pre-existing PE prog. Data anal did not reveal any statistically sig diff in the tested variables among the treatment and control gps. It was concluded that even though no sig diff were found, the Curricular Module is a unique and viable instructional package that provides teachers with a flexible and easy to implement plan for fitness instruction.

35. CHAMBERS, S.A. Barriers and recommendations to the implementation of comprehensive school health instruction programs in the public school systems in the United States. MA in Applied Health, 1991. (N. T. Ellis)

The problem of this study was to investigate barriers and recommendations to the implementation of comprehensive HE instruction in public school systems in the US as perceived by members of the Council of Chief State School Officers (CCSSO). The results from this study were intended to (1) prioritize the sig of the barriers to implementation of comprehensive school HE instruction, (2) determine the relative distance between each sig barrier and (3) offer plausible recommendations to HE educators, administrators and policy makers to overcome these barriers. A structured response, paired-comparison survey instrument was dev and submitted to 7 jury members for review of content validity. The final instrument was mailed to 56 of the 57 members of the CCSSO on Feb 7, 1991, with a letter of support from the President of the CCSSO. A postcard reminder was sent 2 1/2 wks after the initial mailing. A response rate of 82% was achieved. Data were subjected to descriptive statistics using a table that summarizes the proportion of times that respondents chose one barrier over another. Ss' recommendations were assorted and coded qualitatively. Demographic variables were subjected to meas of association using chi-square goodness of fit. The probability level of .05 was selected. The CCSSO members perceived the number one barrier to implementation of comprehensive school HE instruction prog to be lack of local administrative commitment. When placed on a scale to determine relative distance, this barrier was sig distant from the second and third ranked barriers which were close together. The second ranked barrier was lack of adequately prepared teachers. The third ranked barrier was insufficient time in the school day/yr. Neither CCSSO members' gender nor yrs of exp exhibited any diff on the Ss' responses on the number one ranked barrier. Recommendations given by the CCSSO members suggested more quality, available pre-service, and inservice prog for teachers to increase their ability of instructing HE as well as their attitude toward the importance of HE.

36. CRAWFORD, T.C. A developmental analysis of competitive orientation in team sports and individual sports. DPE in Physical Education, 1990, 143 pp. (D.L. Gallahue)

906 M athletes were randomly selected from 56 diff schools to examine diff in perceived competence, perceived control, and motivational orientation at 3 competitive levels, in team and individual sports. All Ss completed the Sport Orientation Questionnaire (Gill & Deeter,1988), the Perceived Competence Scale for Children (Harter, 1982), and the Multidimensional Meas of Children's Perceptions of Control (Connell, 1985). The data were anal using a 3 x 2 (competitive level x setting) MANOVA with follow-up univariate F-tests, post-hoc Tukey tests and discriminant function anal. M competing at the varsity HS level reported sig higher levels of motivation to compete, win, and pursue individual goals than M competing at the JHS level. M at the varsity level also reported sig higher perceptions of physical competence, and sig lower levels of unknown control. Diff in setting occurred at the non-varsity HS level, with M

competing in team sports reporting sig higher levels of motivation to compete and win, and higher perceptions of physical competence.

37. DUITSMAN, D.M. The relationship of psychosocial factors to recuperation and quality of life in heart transplant recipients. HSD in Health Education, 1990, 170 pp. (W.P. Kroll)

This study investigated the psychosocial variables that sig influence rejection, infection, and quality of life in heart transplant recipients. A total of 132 heart transplant recipients from 5 diff Midwestern transplant centers completed the questionnaire instrument. The paper and pencil responses for rejection and infection were found to be consistent with the medical records of a subsample. The questionnaires were either mailed or admin during routine clinic visits. Rejection, infection, and quality of life were the dependent variables and served as the objective and subjective meas of recuperation. A logistic regression anal revealed sig relationships ($p \leq .03$) between well-being, self-esteem, anxiety, and rejection. The logistic regression for infection displayed sig relationships ($p \leq .01$) between educ, well-being, and identity stability. A multiple regression anal showed that high self-esteem,low depression, high marital satisfaction, the female gender, high body image, and high family well-being were associated with a high quality of life ($F=51.39$, $R^2=.76$, $p=.00$). The results indicate that certain psychosocial factors have a sig relationship with rejection, infection, and quality of life. It would appear that these psychosocial factors may have a sig influence on the recuperation and quality of life of heart transplant recipients.

38. HARTSHORN, C.S. Service quality as perceived by public, private, and voluntary sector managers of the leisure fitness industry. RED in Recreation, 1990, 258 pp. (D.R. Fesenmaier)

A mail survey of managers of municipal park and rec dept, YMCA's, and private athletic clubs (200 each) was conducted to meas perceptions of service quality, utilizing SERVQUAL. Definition diff were meas through ANOVA (with Tukey's test for multiple comparisons) and ANCOVA (holding gender, age, level of educ, and salary constant). Response rate was 65.7% Respondents strongly agreed on the importance of service quality to the success of their services. Each sector identified "assurance" as the most important dimension of service quality; "empathy" was identified as the least important dimension. The scores for the respective dimensions showed a narrow range of variation between the sectors, clustering toward the high end of the scale. However, sig diff were found to exist between sectors for the overall SERVQUAL scores as well as for the dimensions of tangibles, responsiveness, and empathy. Post hoc anal showed the greatest diff in scores existed between public and private sectors. The results suggest that although managers of the leisure fitness industry from all 3 sectors agree on the definition of service quality, the private sector shows more concern with service quality than the public sector, with the voluntary sector most similar to the private sector.

39. HOGE, G.W. Attitudes, subjective norms, perceived behavioral control, intentions, and behavior toward providing special recreation. PhD in Human Performance, 1990, 126 pp. (D.R. Austin)

Relationships among attitudes (A), subjective norms (SN), perceived behavioral control (PBC), and intentions (INTEN) of IN park/rec practitioners toward providing special rec (SR) services to persons with disabilities were investigated. The relation of these variables to actual provision of SR and certain demographic variables and intentions were also examined. 233 supervisory-level park/rec practitioners were mailed an attitude questionnaire. 156 were returned. 140 of the original respondents were mailed a follow-up behavioral questionnaire 6 weeks later. 97 were returned. Data were organized into 4 gps: the original sample (n=146); behavioral questionnaire respondents (n=97), behavioral questionnaire respondents working in agencies offering full or partial special rec (n=57); and those working in agencies not offering these services (n=40). Statistical techniques used were frequencies, r, hierarchical multiple regression, partial r and t test. For gps 1, 2, and 3, A, SN, and PBC were predictive of INTEN to provide SR. For GP 4, only A were predictive of INTEN to serve persons with disabilities. An important finding was that PBC contributes sig to INTEN to provide SR for the majority of respondents. Combined results indicate that educ efforts to increase PBC, positive A, and SN pressures might help increase SR services.

KENT STATE UNIVERSITY (D.T. DEUTSCH)
KENT, OHIO

40. KAMINSKY, J.D. Critical time periods in relation to team success in college basketball. MA in Physical Education, 1990, 90 pp. (R.E. Stadulis)

Data from the 1985-86 Mid-American Conference BB season, as well as that of the 1986-87 Kent State Univ season, were examined for each game on a min-by-min basis. Using MANOVA and discriminant function anal, 2-min and 5-min time periods were found to be the best discriminators of game outcome (win/loss). In no instance did game location (home/away) contribute to the diff. For 2-min intervals, fouls committed, free-throws made, free-throws missed, and 3-point shots missed in the final 2-min period (min 39-40 of the game) were the best discriminating meas in predicting game outcome. The winning team evidenced more free-throws made and missed, while the losing team evidenced more fouls and 3-point shots missed during the final 2 min of the game. The 5-min anal found fouls, free-throws made, and 3-point shots missed, in the final 5 min period (min 36-40), to be the most effective discriminators, with the winning team exp more free-throws made and the losing team committing more fouls and missing more 3-point shots. For both data sets, only fouls committed in the last 5 min of the game was a common predictor in regression equations predicting final game point spread.

41. STARR, M.T. The relationship of conflict styles and team cohesion of high school basketball players. MA in Physical Education, 1990, 99 pp. (R.E. Stadulis)

The participants in this study were HS varsity boy (n=31) and girl (n=61) BB players. Players' perception of team cohesion was meas by the Group Environment Questionnaire which meas: Individual attraction to the group-task (ATG-Task); individual attraction to the group-social (ATG-Social), group integration-task (GI-Task); and group integration-social (GI-Social). The Thomas-Kilmann Conflict MODE Instrument was used to meas conflict styles: competition, collaboration, compromising, avoiding, and accommodating. Slight but pos relationships were evidenced between collaboration and both task cohesion meas (ATG and GI), and between compromising and GI-Social. A neg but slight relationship was found for competing with GI-Social. When considering player status, starting players reported perceptions of higher ATG-Task cohesion than bench-sitters. A 2 x 3 MANOVA yielded sig effects for gender and gender interacting with success (winning, even, or losing records). For boys, members of winning teams demonstrated higher levels of cohesion and compromising style than even and losing teams. For teams with even records, girls reported higher levels of ATG-Social, GI-Social, compromising, and accommodating than boys. For losing teams, girls' ATG-Task and GI-Social perceptions were higher than boys'. Boys from teams with even or losing records reported higher levels of competition than girls.

NORTHEAST LOUISIANA UNIVERSITY (L. THOMAS)
MONROE, LOUISIANA

42. BROBERG, K.T. Female collegiate athletes and coronary risk factors. MEd in Health and Physical Education, 1989, 62 pp. (L. Thomas)

Anaerobically trained F coll athletes were compared to nonathletic F coll students to determine if their coronary risk profiles diff sig. The Ss for this study were 38 F varsity athletes and 19 inactive F students enrolled at Northeast LA Univ, Monroe, LA. Each S was to complete a 3 day activity and food intake record. Ht, wt, & %BF, resting HR (RHR), resting SBP (RSBP), and resting DBP (RDBP) were meas and recorded. A max treadmill test was completed by each S and a venous blood sample was drawn to determine plasma lipid and lipoprotein levels. MANOVA indicated sig among gps. Post hoc anal via univariate ANOVA indicated sig gp diff for RHR, treadmill time, risk factor score, and cigarette smoking. Although the athletes demonstrated a sig higher cardiorespiratory fitness level, no sig diff was noted between athletes and control Ss' lipid and lipoprotein levels. These findings suggest that anaerobically trained F coll athletes do not exhibit an improved coronary risk factor profile in comparison to inactive coll F.

NORTHERN ILLINOIS UNIVERSITY (M.N. ZIMMERMAN)
DEKALB, ILLINOIS

43. BRADLEY, A. The Wingate test: The effect of load on the power outputs of college-age female athletes and nonathletes. MS Ed in Physical Education, 1991, 44 pp. (T. Ball)

To determine the effect of varying load (75, 85, 95, and 105 gm-kg of BW-1) on PP, MP, and FL, 46 F, (25 nonathletes (NA), 13 field hockey (FH) and 8 softball (SB) players) 21.9±3.2 yrs performed the 30 sec Wingate Anaerobic Test (WAT) on 4 separate occasions. The variables PP (W), PP (W.kg of BW-1), MP (W), MP (W.kg-1), and FL were anal using a repeated meas ANOVA. The results were as follows:

Group	PP (W/W.kg-1)	MP (W/W.kg-1)	FL (%)
NA	575.6/9.7 ±95.7/±1.1	410.9/6.9 ±70.3/±.8	46.9 ±7.1
FH	652.9*/10.9** ±81.5/±.8	476.7*/7.9** ±50.4/±.5	46.3 ±5.5
SB	639.7/9.9 ±67.5/±.95	463.9/7.2 ±50.4/±.8	46.3 ±6.8

*FH > NA; **FH > NA & SB (p < .05)

Load	PP (W/W.kg-1)	MP (W/W.kg-1)	FL (%)
75	575.5/9.6 ±80.8/±.9	429.6/7.2 ±57.8/±.6	44.3 ±6.9
85	607.98/10.1 ±90.5/±.9	445.7/7.4 ±68.2/±.8	45.8 ±6.2
95	616.7/10.2 ±96.8/±1.0	439.7*7.31 ±71.4/±.9	47.2 ±7.0
105	634.3/10.6 ±106.9/±1.3	439.7*/7.33 ±76.8/±.99	49.1 ±6.3

*No statistical diff between load settings (p > .05)

It can be concluded that coll age F will generate higher power outputs at loads greater than 75 gm-kg of BW-1 when performing the WAT. Loads of at least 105 gm.kg of BW-1 are needed to obtain max PP (W) and PP (W.kg of BW-1). FH players produce greater peak and mean power outputs (W) than either NA or SB and greater peak and mean power outputs (W.kg of BW-1) than NA. The use of a load of at least 85 gm.kg of BW-1 to generate max MP (W) and MP (W.kg of BW-1) in coll age F is suggested. Furthermore, PP (W) and PP (W.kg of BW-1) continued to increase from 75 to 105 gm-kg of BW-1; therefore, it is unknown if 105 gm.kg of BW-1 will result in highest power output.

44. FELIX, E.S. Cholesterol profiles and their relationship to percent body fat among adults with mental retardation. MSEd in Education, 1990, 63 pp. (G. Tymeson)

Few studies have described chol levels among adults with MR, and a high prevalence of obesity has been found in the lit for these individuals. The purpose of this study was to describe total chol (TC), high-density lipoprotein (HDL), low-density lipoprotein (LDL), and the TC:HDL ratio for persons with MR, and to determine a relationship between these chol variables and %BF for M and F Ss. 32 M (M = 30.1 yrs) and 37 F (M = 30.3 yrs) with mild and moderate MR were examined to evaluate TC, HDL, LDL, TC:HDL ratio, and %BF. Chol variables were aldo correlated with %bf. M had sig higher ($p < .02$) TC values than F (202.2 mg/dl vs. 176.0 mg/dl) and sig higher ($p < .02$) LDL values (137.5 mg/dl vs. 108.9 mg/dl). Nonsig diff ($p > .02$) existed between gender for HDL (M = 44.8 mg/dl; F = 45.4 mg/dl). TC:HDL ratios were 4.8 for M and 4.0 for F ($p < .02$). The TC:HDL ratio was sig ($p < .02$) correlated with %BF for the F ($r = .42$). No additional sig relationships were found between %BF and the other chol variables for M and F. Results suggested that %BF was not strongly associated with the chol variables for these adults with MR, and the individuals in this study are not at risk for CHD.

45. GANTZ, J.L. Development of the attitudes toward the disabled in physical education scale. MSEd in Physical Education, 1991, 74 pp. (J. Rimmer)

The Attitudes Toward the Disabled in PE Scale (ATDPES) was developed and field tested with 113 students in grades 5 and 7. The Peer Attitudes Toward the Handicapped Scale (PATHS), a previously validated instrument, was also admin to all Ss. 46 of the Ss completed the ATDPES a second time 2 wks later to establish test-retest reliability. Exploratory factor anal was conducted, revealing no clearly defined factors. However, 4 subscales were tentatively defined and used in subsequent anal. Statistical anal were completed using total scores and subscale scores. Internal consistency for the total score ranged from .85 to .90

across grades, and evidence for stability was seen in the intraclass R coefficients ranging from .59 to .80. The relationship between the ATDPES and the PATHS total scores was moderate (.73). The ATDPES subscales correlated positively with one another (.13 to .37). The ATDPES was recommended for use in mainstreamed PE classes to evaluate general receptiveness toward students with disabilities.

46. KING, S.G. The contribution of arm swing to vertical jumping. MSEd, 1990, 70 pp. (Y. Takei)

The ht of vertical jumps with and without arm swing were compared. Current research in depth jumps uses a method in which arm swing is nonexistent. The influence of arm swing may contribute greatly to the performance of a jump. Furthermore, in sport situations an arm swing is widely used. 15 Ss performed 6 jumps. High speed filming was conducted at 99 Hz and the projected images were digitized using a 21 point, 14 segment model. Dependent, two tailed t-tests were used to anal the kinematic data. The dependent variable was the vertical displacement of the center of gravity and the independent variable was the type of arm motion: swing or no swing. In the countermovement jump, in which the hips, knees and ankles flexed prior to take off from the floor, a gain of 25% in vertical displacement was seen when the arms were swung over the no swing condition. In the depth jumps from 25 and 75 cm the arm swing enabled the Ss to jump 18 and 20% higher respectively. It was thought that the Ss jumped higher after swinging their arms because their bodies produced more total energy that may have been applied to the floor vertically downward to assist in take off. The major implication is that researchers investigating depth jumping must consider the assistance of the arms when designing depth jump studies in the future.

47. LAMONTAGNA, R. Validity and reliability of the 20-meter shuttle test in American females 19-34 years of age. MSEd in Physical Education, 1991, 40 pp. (T. Ball)

41 F, 19-34 yrs of age, completed 2 trials of the 20 meter shuttle test (20MST) and a treadmill test to determine VO_{2max} in order to determine the validity and reliability of the 20MST. Skinfolds (triceps, suprailiac, thigh), ht and wt meas were taken to determine whether accounting for bf improves the prediction of VO_{2max} from 20MST results. Intraclass reliability coefficients were .92 for lengths completed and .92 for max speed obtained, with trial 2 eliciting sig higher values for both lengths completed (p<.05) and max speed obtained (p<.05). The following regression equations were developed to estimate VO_{2max} (ml.kg^{-1}.min^{-1}) from the 2nd trial of the 20MST meas in lengths completed (lengths) and max speed obtained (speed) (km.hr^{-1}):

VO_{2max} = .262 (lengths) + 25.49 (r=.76, SEE4.00 ml.kg^{-1}.min^{-1})

VO_{2max} = 4.95 (speed) - 14.06 (r=.71, SEE=4.31 ml.kg^{-1}.min^{-1})
Sum of skinfolds, bw, and ht did not contribute sig to explaining VO2max. The results of this study suggest that the 20MST is reliable and may be a valid method of estimating aerobic fitness in F 19-34 yrs of age.

48. PARKER, L. Comparison of forward and backward chaining instruction on learning and retention of the modified sprint start by adolescents with moderate mental retardation. MSEd Physical Education, 1990, 52 pp. (G. Tymeson)

11 M (M age 15.5 ±1.5 yrs) and 11 F (M age 15.7 ± 1.6 yrs) with moderate MR (MMR) were instructed by either the forward chaining (FC) or the backward chaining (BC) instructional method. A modification of the sprint start was used as the gross motor task. All Ss were pretested. Testing procedures included Ss viewing 3 videotaped trials of the investigator performing the modified sprint start in perfect score form. Ss participated in a 4-wk sprint start instructional unit (two 30-min sessions per wk). A post-test was given immediately after the 4-wk instructional unit and a retention test was admin 7 days after the post-test. The sum of the sprint start scores of 4 raters for each S was recorded on the performance checklist and anal by a 2 x 3 (gp x time) repeated meas ANOVA. The max score was 32 points, 8 points from each of the 4 raters. The gp effect [F(1, 20) = 2.86, p>.05] and interaction effect were not sig [F(1,20) = .90, p>.05]. However, the time effect was sig [F(1,20)=16, p<.05, Geisser-Greenhouse Conservative F-Test]. Both gps increased from pre-test to post-test (FC, 7.2±3.3 and 14.5±8.0; BC, 10.2±6.9 and 18.4±10.3, respectively). There was no diff between post-test and tetention test means (16.4 and 17.4 respectively). These results indicate that FC and BC have the same effect on performance of the sprint start for Ss with MMR.

49. PFOHL, S.Y. Year 2000 health objectives for the nation: Health and physical fitness leaders' perceptions of organizational goal orientation and achievement. MS in Physical Education, 1990, 95 pp. (E.C. Fox)

The dev of the Year 2000 Health Objectives for the Nation has created common goals for all health professionals to promote optimal health status and prevent premature mortality and morbidity. Assoc for Fitness in Business members (n = 178) from 5 subgroups (acd, comm, hospital, private, corporate) were surveyed to determine their perceptions of how "fitting" the Year 2000 Health Objectives for the Nation are for their organization and to what "extent" the objectives are being addressed by organizations. 35 selected health promotion objectives related to risk reduction and public awareness in the areas of physical activity and fitness, nutrition, tobacco, alcohol and other drugs, and vitality and functional independence of older people were used. ANOVA and Tukey post hoc revealed no sig diff at ∞=.05 between subgroups on either how "fitting" objectives were to their organization's mission or to what "extent" their organizations were addressing the objectives. All gps perceived the objectives to be appropriate for their organization and also perceived their organization to be addressing the objectives. In addition, no diff were found related to fitting or extent by gender of leader or by educ level of the leader.

50. STRALOW, C.R. Acute cardiovascular responses of cardiac patients to dynamic variable resistance exercise of varying intensity. MSEd in Physical Education, 1991, 60 pp. (T.E. Ball)

Study investigated the acute CV responses of cardiac patients to a strength training protocol. 14 cardiac patients (13 M, 1 F, M age 57.2 ±7.0 yrs) performed 3 sets of leg extension (LE), leg adduction (LA), arm cross (AC), and bicep curl (BC) using Nautilus machines. 15, 12, and 8 reps were performed at 40%, 60%, and 80% respectively of 1 rep max (1RM). HR, SBP, DBP, and EKGs were recorded during the last 3-5 reps of each set. No angina, ST segment depression, or sig arrhythmias occurred during Nautilus exercise (NE) except for 1 S who had runs of bigeminy and trigeminy between sets. The M peak NE responses were less than the M responses achieved at 85% VO_{2max}, except for DBP, which exceeded 85% VO_{2max} by 1-3 mmHg during all sets of LE, and during LA at 60% and 80%. Clinical exercise testing guidelines were exceeded once by 1 S. During lower body exercise, peak responses were sig greater during LE than LA, and were sig greater at 60% and 80% than at 40%. During upper body exercise, the HR response was sig greater during BC than AC at all 3 intensities. RPP was sig higher at 60% and 80% than at 40%. In conclusion, stable cardiac rehabilitation patients may participate in dynamic variable resistance exercise prog utilizing percentages up to 80% of MVC.

51. VEHNEKAMP, T.J. Personal investment theory: Gender differences in exercise motivation and behavior. MSEd in Physical Education, 1990, 81 pp. (J. Bischoff)

The purpose of this study was to identify specific gender diff related to variables associated with exercise motivation and behavior in a coll-age population. The theoretical model applied to investigate motivations for exercise behavior was the Personal Investment Theory (PIT). This model postulates that an individual's behavior is directly related to the meaning of the situation or activity to the individual. Meaning is further defined as personal incentives, sense-of-self, and perceived options and barriers. Exercise-specific meas were used to assess 3 facets of the PIT. A total of 238 M and F undergraduate coll students at a large midwestern univ completed a battery of questionnaires. These were the Physical Self-Perception Profile, Perceived Importance Profile, Personal Incentives for Exercise Questionnaire, Perceived Barriers for Exercise Questionnaire, and a

Physical Activity Report. Independent t-tests revealed that M participated in exercise for competitive and strength-related reasons more than F ($p<.005$). M also perceived themselves to be higher in 4 of 5 of the physical self-perception subscales than F ($p<.01$). F placed a greater emphasis on wt management as an incentive to exercise and had lower perceived physical self-perceptions than M ($p<.01$). The Chi Square Test of Independence revealed that there were no sig gender-dependent response associations for the 9 perceived barriers ($p>.006$). Independent t-tests showed that M participated in more sports and wt-related activities than F ($p.<.01$).

52. ZISK, D.M. The physiological cost of plyometric rebound jumping at varied intensities. MS in Education, 1991, 29 pp. (S.A. Plowman)

34 M (n=30) and F (n=4) (M=20 CA) performed 3 plyometric rebound jumping protocols—self-selected (SS) pace, 15 jumps per set (J/S), and 18 J/S, on separate days. Meas of VO_2, LA, mechanical efficiency, HR, and RPE were recorded, during rest and exercise, as Ss jumped for 30 secs on and off a 16 in (40.64 cm) box. The results from an ANOVA and Tukey's post hoc test demonstrated a sig higher number of jumps during the SS pace (M=20)($p<.05$). The VO_2 was sig higher in SS and 18 J/S (SS=38.94 ±5.65; 15 J/S=35.90 ±4.62; 18 J/S=39.22 ±4.38 kl.kg.$^{-1}$.min^{-1}) than the 15 J/S (p.05). Blood lactic acid concentration was sig greater for SS (9.2 ± 2.56 mMol) and 18 J/S (8.4 ± 2.45 mMol) than for the15 J/S (6.8 ±2.54mMol) ($p<.05$). The mechanical efficiency was sig higher for the Ss (21.7 ±5.06%) than for 15 J/S (17.6 ± 2.62%) or 18 J/S (18.9 ± 2.23%). There was no sig diff in HR. The last set RPE for SS (6.5 ± 1.20) and 18 J/S (7.2 ± 1.23) was sig higher than 15 J/S (5.31 ± 1.24) ($p<.05$). The data revealed that plyometric rebound jumping is a metabolically demanding form of exercise. The SS and 18 J/S paces placed the greatest demands on both the aerobic and anaerobic energy systems.

OHIO STATE UNIVERSITY (W.M. SHERMAN)
COLUMBUS, OHIO

53. ALBRIGHT, A.L. The effect of aerobic training on the evolution of diabetic nephropathy in an animal model of type I diabetes. PhD in Physical Education, 1990. (T.E. Kirby)

While aerobic exercise may have several health benefits for individuals with type I diabetes, the impact of physical training on diabetic nephropathy in type I diabetes is not known. It was hypothesized that 12 wks of aerobic training, initiated after the establishment of mild type I diabetes in M Sprague-Dawley rats, would improve glycemic control, reduce serum lipids, decrease proteinuria, reduce SBP, and minimize the pathological glomerular changes of diabetic nephropathy. 34 M Sprague-Dawley rats made diabetic with streptozocin (45 mg/kg bw) were randomly assigned to a "trained" gp (TD) or a "sedentary" gp (SD). 15 nondiabetic, sedentary rats served as a disease-free comparison gp (SND). The animals were trained on a treadmill at 18 m/min, 8 degree incline and 120 min 5 days/wk. Blood and 24 hr urine collections were made throughout the study and anal for blood glucose, fructosamine, glycated hemoglobin, serum lipids, blood urea nitrogen, serum creatinine, urine creatinine, urine total protein, and urine albumin. SBP was meas prior to sacrifice. Kidney tissue was collected at sacrifice and prepared for light and electron microscopy. A one-way ANOVA was used to detect diff among the gps ($p < 0.05$). The mild diabetes produced in this investigation resulted in hyperglycemia, increased urine albumin and urine total protein excretion, elevated SBP, increased fractional volume of the mesangium, and widening of the glomerular basement membrane in the SD animals. Blood urea nitrogen, creatinine clearance, and serum lipids were not sig impaired in any of the diabetic animals. Aerobic training sig reduced the fractional volume of the mesangium. Improvements in urine albumin, total protein, SBP, and some indices of glucose control occurred with training, but the changes were intermediate between the SND and SD gps and were often not sig diff from either gp. It appears that aerobic training can sig reduce some of the glomerular pathological changes of diabetic nephropathy and may improve glucose control. Moreover, this study demonstrated that training does not augment the renal damage seen in diabetic nephropathy.

54. BARR, D. M. Development of physical education least restrictive environment quality program indicators: A Delphi study. MA in Physical Education, 1990. (S. Stroot)

This study utilized a three-round normative Delphi method to address the development of PE least restrictive environment quality prog indicators. Panelists consisted of adapted physical education univ experts and public school specialists exp with programming and placement of students with disabilities in the least restrictive environment. A total of 241 PE least restrictive environment quality prog indicators were identified in the categories of: philosophy, structure, assessment, curr, personnel, student, and activities. Additionally, results include mean rankings of indicators according to category for the panelist group as a whole, and those indicators rated highest by univ and public school panelists separately.

55. FRANKLIN, M.J. An evaluation of student attitudes, intentions and personal health behaviors as a result of having completed health education 214 at the Ohio State University during the Spring Quarter of 1990. MA in Physical Education, 1991. (M.S. Chen, J.)

The purpose of this thesis was to evaluate students who enrolled in and completed Health Educ 214 "AIDS: What Every Coll Student Should Know," in the spring of 1990, in terms of their lifestyle related attitudes, intentions and associated health behaviors. The primary focus of Health Educ 214 was on educ as a means to reduce the risk of becoming infected with HIV, implying that knowledge is a sufficient prerequisite to influence human behavior. Based on this study, this course, and AIDS educ at O.S.U. in general, could be improved by including techniques for examining student attitudes and intentions and assisting students in assessing and reducing their risk of HIV infection. However, the results of this study should be interpreted in the light of an instrument that requires further review.

56. MONTURO, J.M. Determining the recreation, fitness, and leisure interests of the current members of the city of Kettering Parks and Recreation Senior Center. MA in Recreation, 1991. (N. Wardwell)

The purpose of this study was to assess the rec, fitness, and leisure interests of the current members of the city of Kettering Parks and Rec Senior Center in order to provide the Senior Center staff with information useful for designing future prog. 3,040 senior citizens were surveyed via a mail questionnaire which asked them to indicate how often they participate in specific leisure activities and their interest in these activities. The results indicate that the seniors are most interested in health and fitness prog (walking, swimming), cultural events (plays, music concerts, lectures), and social activities (movies, dinners, parties).

57. QUICK, S.P. World Series Cricket, television and Australian culture. PhD in Physical Education, 1990. (M.L. Adelman)

This study examines how changes in Australian culture, society and television interfaced with changes within the cricket world to produce the World Series Cricket era. It establishes that while television is more a vehicle for change in the sporting world than its cause, and operates within predetermined societal boundaries, it also exerts pressure against such parameters in an attempt to shape the viewer's experience. The conflict between the Australian Cricket Board and World Series Cricket erupted as a result of forces both external and internal to the cricket world. Emerging liberal influences coalesced with a changing social composition to create a heightened national consciousness, especially in the sport world. Similarly Australia was not immune from international events at this time. Changing attitudes toward leisure and expectations of entertainment gave rise to a sport environment that was receptive to entrepreneurial capital. Yet WSC was not simply a product of forces external to the cricket world. Since the middle of the 19th century Australian cricket had exhibited a commercial overtone which was constantly opposed once organizing administrative bodies were put in place. Furthermore a lack of rapport between such administrators and the athletes has been an ongoing feature of cricket's development since the control of the game shifted away from the players. Finally the traditionalist cricket mentality was rigidly adhered to in Australian cricket even though by the 1970s it was out of step with societal values. WSC and the growth of commercially televised sport in Australian society is endemic with conflict and as such is indicative of the forces of the era. However, it is also illustrative of continuity and growth and the ability of the Australian society to be pragmatic, to utilize and replicate the success of others and to merge the old with the new in order to facilitate cultural progress. WSC demonstrates how institutions provide the link between the past and the future and how conflict is responded to and incorporated within society to provide continuity. Elements of both conflict and continuity co-existed to create the cultural context for World Series Cricket. WSC was simply a product of its time.

58. TODARO, R.E. The perceived influence of participation in intramural sports on purpose, interpersonal relationship, and autonomy. PhD in Physical Education, 1990. (S. Kleinman)

Student dev has been defined by B.B. Crookston (1972) as the "application of the philosophy and principles of human dev in the educ setting." Specifically related to higher educ, student dev describes the impact the institutional environment and exp has on students. The sport environment has been described by Loy, Kenyon, & Moore as a mini-society or a participatory model of life. If it is agreed that this is an accurate description, it should follow that dev opportunities in the larger world environment and those in the sport environment are similar. This study utilized Arthur Chickering's dev theory described in Education and Identity (1969) to investigate the perceived influence of participation in intramural sports activities on the dev of the vectors' purpose, interpersonal relationship, and autonomy. In addition, this study investigated the effects of commuter versus resident status on the dev of the above mentioned vectors. Lastly, the results of this study will be utilized to identify strategies of intramural sports prog design and delivery which will increase its student dev contributions. The method of triangulation was used to collect data. The Student Development Task and Lifestyle Inventory (1987), specifically designed for evaluation of co-curr prog, was utilized as the quantitative instrument. Qualitative data collection utilized a Semi-Directed Focused Interview with each S. The population of the study consisted of a stratified cluster sample of full-time undergraduates enrolled at Xavier Univ, Cincinnati, OH, during Spring 1990 and Fall 1990 semesters. A total of 44 participants (frequent and infrequent users) and 29 nonparticipants completed the two-part data collection process. The anal of the participant categories revealed a high pos perception by students about the importance intramural sports involvement has on the undergraduate educ exp. The pos perceptions, although lower, of the nonparticipant gps further substantiated the fact that co-curr prog, in general, are a part of total student dev.

OREGON STATE UNIVERSITY **(S. HENDERSON)**
CORVALLIS, OREGON

59. LEE, Y.S. The acute effects of moderate intensity circuit weight training on lipid-lipoprotein profiles. PhD in Human Performance, 1990. (J.P. O'Shea)

Few studies have examined the acute effects of resistive-type exercise on lipid-lipoprotein profiles. This study examined the acute effects of a single session of circuit wt training (CWT) on plasma lipid-lipoprotein profiles: triglycerides (TG), total chol (TC), high density lipoprotein chol (HDL-C), low density lipoprotein chol (LDL-C), and the ratio of TC to HDL-C. The Ss in the study were 17 healthy, nonsmoking M univ students, ages 18-25 yrs, enrolled in wt lifting classes. Ss were required to fast overnight (at least 12 hrs) before CWT. Ss repeated a 4-station wt training circuit 3 times, with a resistance determined by their individual 3 rep max (3-RM). The stations were bench press, parallel squat, leg extension, and seated row. Blood samples were drawn from the antecubital vein at pre-CWT, completion of the 1st and 3rd circuits, and 15 min post-CWT. All concentrations of plasma lipid and lipoprotein chol were corrected for plasma changes. A repeated meas ANOVA was used to determine if sig diff existed among mean values for the dependent variables (i.e., levels of TG, TC, HDL-C, LDL-C, and TC/HDL-C ratio at specified time points). Results of the study indicated that plasma TC and HDL-C levels were changed sig during and following CWT. However, the change was not in the anticipated direction: Plasma TC and HDL-C levels were lower at completion of the 1st circuit of CWT ($p<0.05$). The ratios of TC to HDL-C were changed sig, reflecting a decrease in HDL-C during CWT and a slight increase in HDL-C at 15 min post-CWT. Plasma TG and LDL-C levels were not changed sig during CWT or 15 min post-CWT. It was concluded that apparent changes in lipoprotein patterns occur during short-term moderate intensity CWT and return to pre-CWT levels in a relatively short time.

PENNSYLVANIA STATE UNIVERSITY **(J.G. THOMPSON)**
UNIVERSITY PARK, PENNSYLVANIA

60. BEALER, J.C. The effects of kinesthetic and/or visual presentation on the reproduction of a compound linear pattern. MSc in Physical Education.

61. BROWN, J.P. A descriptive study of drug education programs for college athletes. MSc in Physical Education.

62. CASTELLANI, J.W. The effect of exercise on the cutaneous thermal pain threshold. MS in Exercise and Sport Science, 1989, 83 pp. (J.L. Hodgson)

Absolute cutaneous thermal pain thresholds (° C) (ACTPT) were examined in 8 M (21 to 33 yrs old) with a fitness level of 41.9 to 56.4 ml.kg-1.min to investigate if an adaptation to pain occurred, the test-retest repeatability of the ACTPT meas, and if exercise intensity affected the ACTPT. Ss performed two control sessions prior to initiating the exp protocol. Each control session consisted of 4 ACTPT meas (min 0, 13, 15, and 30) while sitting upright at rest on a cycle ergometer. The exp protocol consisted of 6 testing days: two 15 min bouts of upright cycle ergometry at 60% VO_{2max}, two 15 min bouts of upright cycle ergometry at 80% VO_{2max}, and two control sessions. Absolute cutaneous thermal pain thresholds and initial skin temp (° C) were meas at min 0 (pre-exercise), 13 (during exercise), 15 (immediately post-exercise), and 30 (15 min post-exercise). A 3-way repeated meas ANOVA was used to determine sig diff. The ACTPT increased with time during the control. This was caused by an adaptation response or increase in initial skin temp (° C) (IST). Test-retest repeatability decreased at min 13, 15, and 30. This was caused by a change in the IST for meas taken at these min. The IST did not affect repeatability at min 0. It was concluded that exercise intensity did not change the ACTPT.

63. CHEW, H.G. Jr. Femoral artery atrophy following prolonged reduced hind limb activity. MS in Exercise and Sport Science, 1989, 75 pp. (S.S. Segal)

The hypothesis of this study was that chronic reduction of hind limb muscular activity would result in a reduction in femoral artery (a) diameter. In F Sprague-Dawley rats, reduction of hind limb activity was induced via tail suspension (TS) for 8 wks. Cage sedentary (CS) and pair weighted (PW; to match TS) rats served as controls. After 8 wk of interventions, rats were anesthetized and cannulated. Papaverine was infused (ie) to obtain max vasodilation and thereby eliminate smooth muscle tone. A silastic rubber casting compound was infused (carotid a) while pressure was monitored (caudal a). The external diameter of femoral a recorded (video microscopy) during stepwise inflation was 16 to 18% less ($p<0.05$) at each inflation pressure in TS than CS or PW. Vascular compliance was reduced ($p<0.05$) in TS rats. Luminal diameter (cast external diameter) was not diff among gps at any of 10 chosen anatomical sites; however, cast dimensions may be unstable over time. Hemodynamic parameters were not diff among gps. Depression of femoral arterial blood flow in response to reduced hind limb muscular activity is hypothesized to underlie the reduction in femoral arterial diameter.

64. COSTA, G.M. An investigation of the mechanisms underlying the mental practice effect. MS in Exercise and Sport Science, 1989, 110 pp. (J.B. Shea)

The purpose of this study was to investigate the mechanisms underlying the mental practice effect. The study involved 2 exp. 60 Ss were used in Exp 1 and 40 Ss were used in Exp 2. All Ss volunteered and were students between the ages of 18-21 from the PA State Univ. The task involved knocking 4 of 6 barriers down in a prescribed order in 1.6 s, either mentally, physically, or just estimating the target time of 1.6 s. Exp 1 involved 3 treatment conditions for acquisition (mental practice, physical practice, and time estimation). Exp 2 involved only 2, mental practice and physical practice. In both exp all Ss were randomly assigned to one of the treatment conditions, and were given 41 acquisition trials with KR. All Ss then received a 2 min filled retention interval followed by 20 retention trials without KR. During retention, half of the Ss remained in the same condition and half of the Ss switched conditions. In Exp 2, Ss received 20 additional retention trials without KR, during which those Ss who switched conditions during Retention Test 1 switched back to their original acquisition condition. The study required app 45 min per S. An ANOVA was run on CE, VE, and ACE for acquisition, retention, and between the last block of acquisition and the first block of retention for Exp 1. The same anal were run for Exp 2 with the addition of Retention Test 2. The Newman-Keuls procedure was used to determine diff between gps. The results of Exp 1 and 2 indicated that mental and physical practice during acquisition are operationally and functionally diff since ACE and VE were sig diff for retention transfer conditions. In addition, results show that time estimation and mental practice conditions utilized diff mechanisms during acquisition.

65. GOGINSKY, A.M. Microcosmic characteristics of aggression in professional ice hockey. MS in Exercise and Sport Science,1989, 133 pp. (D.V. Harris)

Sig relationships between specific characteristics of the games (N=1,680), teams (N=21), and players (N=728) of the National Hockey League and illegal aggressive behavior (as defined by penalty min) during the 1985-86 and 1986-87 seasons were anal by ANOVA and t tests. Anal were performed between categories within each characteristic for each season and between the two seasons. Increased penalties were assessed during divisional games, and minor league exp, NHL exp, score differential, and system of hockey dev were integral components to explain the occurrence of illegal aggressive behavior. Crowd size, game outcome, team status (home/visiting), player position, age, and no. of trades were not determinants of illegal aggressive behavior. The hypotheses that players with Scandinavian exp are not aggressive and that team success is not jeopardized by illegal aggression were not supported. The anal of the effectiveness of the Oct 1986 fight-instigator rule yielded an impressive (but not sig) decrease in fighting penalties during the 1986-87 season. There was, however, an increase in the overall no. of illegal aggressive penalty min, indicating that illegal aggression was expressed through alternate forms of behavior.

66. GORDON, A.M. Programming time as a function of movement constraint. MSc in Physical Education.

67. GRACE, T.W. The effects of a progressive resistance strength training program on isometric lumbar extension strength of men and women. MS in Exercise and Sport Science, 1989, 63 pp. (J.L. Hodgson)

The purpose of this investigation was to compare the effect of a progressive resistance strength training prog (PRSTP) on isometric lumbar extension strength of M and F. 58 healthy M (n=30) and F (n=28) 20 to 35 yrs of age completed the study. During the pre-test and post-test, lumbar extension strength was meas isometrically through a full ROM at 7 angles on a MEDX^{tm} lumbar extension machine. All Ss completed the 7 angle isometric exercise test. The exercise gp participating in the PRSTP trained dynamically one time/wk for 12 wks through a full ROM on a MEDX^{tm} lumbar extension machine. The exercise gp completed one set of 8-12 rep of variable resistance lumbar extension to volitional fatigue. The results of this investigation showed that M and F achieved sig strength gains in the lumbar region, meas isometrically, as a result of participation in a 12-wk PRSTP in which the muscles of the lower back were isolated and exercised. There was a gender diff in isometric strength percentage increases and no gender diff in training resistance increases while training on a PRSTP for the muscles of the lower back.

68. HALL, B.L. Dynamic displacement and pressure distribution in alpine ski boots. MS in Exercise and Sport Science, 1989, 101 pp. (R.C. Nelson)

Motion of the lower leg and pressure at the interface between boot and leg were anal in both skiers and nonskiers to investigate how ski boot designs affect the safety of the skier and the ability to improve alpine skiing technique. 16 M Ss, 8 skiers and 8 nonskiers, were tested in 5 boot conditions including traditional, rear entry, and mid entry designs. Ss performed a series of rapid downward mvmts ("unweighting") on skis attached to a platform. Pressure data were collected using a capacitance meas mat located above the ankle along the anterior surface of the lower leg. Displacement of the leg and boot were determined from 2-dimensional video anal. Results from ANOVA indicated that pressure generated on the lower leg by exp skiers was 1.6 times larger than for nonskiers. Flexion of the boots was 1.4 times greater for the skiers. The ratio of pressure to angular displacement was consistent across gps but varied among boots indicating that flexion characteristics are governed by the design of the boots. It is recommended that beginning skiers use a boot with a greater angular deflection for a given applied pressure.

69. HELMAN, J.W. A history of intercollegiate athletic eligibility: Educational compromises to competitive interests. PhD in Physical Education.

70. HOUSTON, E.D. Relationship between eye dominance and basketball shooting. MSc in Physical Education.

71. KENNEDY, P.W., JR. Analysis of male and female Olympic swimmers in the 100 meter events. MS in Exercise and Sport Science, 1989, 69 pp. (R.C. Nelson)

Data were gathered from videotapes of the 1988 Seoul Olympic Games swimming preliminary heats (backstroke, breaststroke, butterfly, freestyle) for M and F. Races were videotaped by panning a camera located at the top row of the spectator seats. Ave stroke frequency (SF) was calculated from the no. of frames required to complete 4 full stroke cycles in the middle of the pool. Ave stroke length (SL) were obtained for each swimmer by dividing velocity by SF for each length. Age, ht, and final time (FT) data, taken from official Olympic Games documents, were also included in the anal. FT vs. SL and FT vs. ht correlations were sig ($p<.05$) for most events. FT vs. age and FT vs. SF correlations were not sig. SL and SF correlations were sig for all events, while age correlated sig with other variables more for F's swimming than M's. Regression equations predicting FT used SF and SL as the dependent variables. Sig diff between M and F variable means were found. Across swimming event comparisons revealed that for both M and F the mean age and hts were not diff, while FTs were diff ($p<.05$).

72. McCORMICK, B. The experience of self in Alcoholics Anonymous: Implications of leisure. MS in Recreation and Parks, 1990, 149 pp. (J.P. Dattilo)

The knowledge which can be garnered from existing research is limited for therapeutic rec specialists working with people with alcoholism. The purpose of this investigation was to contribute to that body of knowledge by embracing a qualitative approach in which the researcher sought to discover meanings of leisure from the perspective of persons recovering from alcoholism in Alcoholics Anonymous (AA). A theoretical sampling method was employed whereby aspects of the social world of AA were sampled based upon their perceived usefulness in developing theory. Initial findings directed subsequent sampling. Data were collected through field notes and in-depth interviewing. Data were anal through coding of field notes and transcripts and memoing of coding results. Findings indicated that AA members exp themselves as being inferior and different from those around them. Another finding was that the understanding of alcoholism, within AA, demonstrated distinct parallels to philosophical ideals of leisure. The final major finding was that the exp of self within AA had direct implications to leisure in terms of time and meanings of leisure behaviors. Implications of the findings of this study were drawn to both future research as well as therapeutic rec practice.

73. McNITT-GRAY, J.L. Kinematic and kinetic analysis of drop landings. PhD in Exercise and Sport Science, 1989, 152 pp. (R.C. Nelson)

During a landing impact, the large forces applied to the human body create the potential for injury. In particular, the risk to the lower extremities during gymnastics landings has been proven to be high. The forces experienced may be modified by the human by selectively controlling the joint motion. To determine the effect of impact velocity (2.5 to 5.0 m/s) and landing exp on the strategy selected, the preferred landing strategies used by 6 M coll gymnasts and 6 M rec athletes from 3 drop hts (.32 to 1.28 m) were characterized using mechanical descriptors. Kinematic and kinetic 2D data were acquired simultaneously using high speed film (202.4 fps) and a force plate (1000 Hz). Reaction forces, net joint moments, lower extremity joint motion, joint work, and the generated momentum of each segment were used to characterize the strategies. Results indicated that statistically sig (ANOVA, p<.05) increases in joint flexion, angular velocity, net moments, work, and impact force resulted as impact velocity increased with the exception of ankle joint flexion. Gymnasts and rec athletes demonstrated similar adjustment patterns to increases in landing impact velocities; however, sig diff in degree of joint and total landing phase time over impact velocity conditions were found.

74. MEIER, S.A. The identification of market segments of competitive runners: Factor analysis of importance-performance attributes. MS in Recreation and Parks, 1990, 90 pp. (F.B. Guadagnolo)

Competitive running is a sport with thousands of participants. Runners compete in 5K and 10K races, marathons, triathlons, and ultra marathons. Hundreds of races are held annually, yet little is known about the runners, their lifestyles, what factors of races are important to them, and if there are diff segments of these runners. The purpose of this study was to create market segments of Great Race participation by anal competitive runners, demographic characteristics and their ratings of the importance and performance attributes of a 10K running race. Factor anal was used to create the segments. The 1988 Great Race data were used as a secondary data set in this study. A sample of 454 general runners who responded to a questionnaire made up the data set. The questionnaire contained 35 importance and performance scales for 10K race attributes, demographic questions and open-ended opinion questions. The importance and performance scale and the demographic questions were used in this study. Based on the anal of the data, 5 importance factors and 4 performance factors were identified. The importance factors were 1) environment; 2) medical attention; 3) recognition; 4) convenience; and 5) registration. The performance factors included 1) safety; 2) environment; 3) convenience; and 4) registration. These sets of factors explained 42.2% and 37.4% of the variance respectively. The gender and age of the competitive runners were compared with their responses to the importance and performance factors to see if sig diff between M and F and the age gps of runners existed. Sig diff between M and F were found for the environment, medical attention, recognition, and convenience importance factors at the .01 level. The age gps of runners had sig diff at the .05 level for the importance factors of environment and recognition and the performance factor of convenience. In spite of sig diff between M and F competitive runners and the age gps of runners, only one market segment of runners was found. The competitive runners in the 1988 Great Race are a fairly homogeneous gp.

75. MILLIRON, M.J. The influence of feedback induced modification of running style on the economy of experienced distance runners. Ms in Exercise and Sports Science, 1989, 134 pp. (P.R. Cavanagh)

Trained distance runners received visual fb on a kinematic parameter to determine the potential for modification of style and any consequent effect on running economy. In Phase 1, 72 Ss completed 3 six-min economy runs at speeds of 3.36 m.s^{-1}, 3.57 m.s^{-1}, and 3.84 m.s^{-1}. The 3.57m.s-1 scores were ranked and 12 uneconomical Ss continued in Phase II. 2 gps (exp and control) of 6 Ss, matched for $VO_{2submax}$, were established. Phase II included 3 stages: pre-training; training; and post-training. During 3 pre-training visits, economy runs were completed and a fb parameter was selected. During 10 training sessions, the exp gp received "real time" visual fb while the control gp received no fb. In post-training visits, economy scores of both gps and the fb parameter for each exp gp S were evaluated. A repeated meas ANOVA showed that the exp gp successfully modifieded their running styles ($p<0.05$). The pre-training to post-training diff of the control and exp gps were not sig ($p>0.05$) although a trend of greater improvement in economy for the exp gp in all post-training conditions was seen. Considering the small sample size, these results suggested the potential of fb as a training technique for possible improvement in economy of experienced distance runners.

76. O'KEEFE, P.L. An evaluation of the variability among experienced testers using the U.S. Army's circumference method to estimate body composition. MS in Exercise and Sport Science, 1989, 60 pp. (K. Stoedefalke)

The US Army currently uses a circumference method to estimate body comp at the company level. The question arose as to whether this method was consistent among companies. 11 M and 9 F Ss between 19 and 28 had their %bf determined by underwater weighing and then each of 8 US Army officers, acting as testers, used the circumference method to estimate each S's %bf. For M, an r between underwater weighing and the circumference method of r = 0.68 was less than the Army's claimed r of 0.82 and less than the Army's goal of r = 0.75. For F, the results were even worse with r = 0.11, much less than the goal of r = 0.75 and the claimed r of 0.78. An ANOVA showed no sig intertester variability in the overall estimate or for any of the individual meas. A plot of residuals from the calculated regression equation showed that the circumference method overestimated those individuals with a low %bf and underestimated those who had a high actual %bf, particularly for F. Conclusions reached were that the Army's technique was probably not a valid methods of estimating %bf, especially for F, but, that the method was consistent among testers.

77. PINCHBECK, L.A. A comparison of ethical attitudes between national level athletes and non-athletes in everyday situations involving ethical considerations. MS in Exercise and Sport Science, 1989, 90 pp. (R.J. Sabock)

A questionnaire was developed by the investigator in order to compare the ethical considerations in everyday situations between national level athletes and non-athletes. The final instrument was admin to 215 national level athletes at the Olympic Training Center in Colorado Springs, CO, and by first-class mail. For the non-athletes, 115 questionnaires were distributed in various Basic Instruction Program (BIP) classes at PA State Univ during the fall semester of 1988. To test for validity, the researcher used 6 judges, 4 from the Graduate Faculty at PA State Univ and 2 from the professional field of admin. A pilot study was also conducted. Based on the judges' remarks and results from the pilot study, the final instrument consisted of 20 statements outlining some type of everyday ethical dilemma, and 10 demographic questions. 2 hypotheses were tested by the investigator. First, a sig diff would exist between national level athletes and non-athletes in their ethical considerations involving everyday situations. Second, non-athletes would be more ethical than national level athletes in their responses to these questions. Data were collected between Jul 15 and Oct 15, 1988. To anal the data, a chi-square anal was performed for each of the 20 questions and for all of the questions as a whole. A profile of the respondents was assessed through descriptive statistics in the demographic section. The main conclusions drawn from this study were: (a) a sig diff does exist between national level athletes and non-athletes in their ethical considerations involving everyday moral dilemmas; (b) national level athletes are more ethical than non-athletes.

78. RADFORD, J.W. An assessment of former varsity high school athletes' perceptions of the values they acquired from their former coaches. MS in Exercise and Sport Science, 1989, 58 pp. (R.J. Sabock)

Former varsity HS athletes were asked to complete a 31-item Likert-type questionnaire between Mar 3, 1989 and Mar 15, 1989 to assess the values they perceived were acquired from their former HS coach(es). The instrument was scored based on the assumption that former varsity HS athletes perceived the values they acquired from their former coach(es) as pos. Respondents (116 M and 35 F) were then placed in either a low or high classification of perceived values. A profile of the respondents was compiled using descriptive statistics. A t-test was performed in the following categories: (a) those who classified athletic careers as unsuccessful to those who classified their careers as successful; (b) Ss who competed for only 1 yr on a varsity interscholastic team to those who competed for 2 yrs or more. The findings were: (a) many of the respondents perceived the values they acquired from their former coach (es) as pos; (b) many of the respondents believed their former coach(es) were a pos influence on them; (c) athletes who classified their athletic careers as successful perceived the values they acquired from their coach(es) more pos than those who reported unsuccessful athletic careers.

79. SCOTT, D. An analysis of adult play groups: Theoretical and empirical considerations. PhD in Recreation and Parks, 1990, 340 pp. (G.C. Godbey)

A synthesis of sociological research pertaining to social worlds, rec specialization, and serious leisure resulted in the creation of a conceptual model of adult play gps. The model was used to explore the nature of adult participation within a distinct social world - contract bridge. A qualitative research study of bridge gps was conducted in order to anal bridge clubs as units of social organization, and orientations among gp members in terms of their bridge preferences, commitment to gp activity, and relationships to other players. Research was conducted in 2 phases. First, the researcher became a participant in local bridge clubs. Second, in-depth interviews were conducted with bridge players. It was discovered that players within the bridge world use the terms "social" and "serious" as a frame of reference in differentiating themselves from others. The terms also provide players a basis for comparing their gps' ways of doing things relative to other bridge clubs. In both cases, bridge players define what constitutes legitimate bridge activity and who are acceptable people with whom to play bridge. As a means of exploring the social versus serious dichotomy, two typologies were presented. First, a typology of bridge gps provides a basis for understanding diff between serious and social bridge clubs in terms of recruitment processes, primary gp function, types of games played, social world linkages, management of club activity, stages during bridge encounter, topics of conversation, stakes, formation of partnerships, characteristics of club members, interpersonal relationships, and types of substitutes. Second, a typology of bridge players provided a basis for distinguishing social players (occasional players and regular social players) from serious players (regular duplicate players and tournament players) on the basis of extent of identification, meaning assigned to participation, frequency of play, game and setting preferences, orientation to competition and master points, primary experiential foci, orientation to skill development, relationship to other players, and relationship of bridge to work, family, and other leisure pursuits.

80. SMITH, G.A. The effect of velocity and grade on the kinematics and kinetics of VI skating in cross country skiing. PhD in Exercise and Sport Science, 1989, 155 pp. (R.C. Nelson)

The VI skating technique involves an asymmetrical cycle with a double poling action associated with the skating of one side but not the other. VI skating forces were meas by a custom force plate placed between each ski and binding and a transducer inserted in each pole shaft. The forces were sampled and stored in a 1.3 kg computerized data collection system carried by the skier. Three-dimensional motion was determined using video direct linear transformation techniques. Both kinematic and force component data were anal for 6 skiers on 2 uphill grades (9 and 14%) and at 4 freely chosen velocities (moderate to sprinting). Cycle velocity, length (CL) and rate (CR) were similar on both grades. CR increased with velocity while CL remained relatively constant. Peak poling forces of about 0.5 to 0.6 bw were considerably greater than observed in classic skiing technique. Total propulsive force from skis and poles tended to increase with velocity and grade. Ski forces dominated the lateral and normal force components while poling forces accounted for about 66% of the propulsive force generated. Thus in the VI skate, the legs function primarily to support the body and induce lateral motion while the function of the arms is primarily propulsive.

81. WRIGHT, D.L. Acquisition and retention of a motor task as a function of intra-task and inter-task processing. PhD in Physical Education.

PURDUE UNIVERSITY **(B. O'CONNOR)**
WEST LAFAYETTE, INDIANA

82. ALLEN, D.M. The comparison of resting metabolic rate in trained vs. untrained females. MSc in Physical Education, 1991. (R. Lyle)

The purpose of this study was to compare resting metabolic rate in trained (n=10) and untrained (n=9) F. Resting energy expenditure was meas by indirect calorimetry with Ss in a 10 hr post-absorptive state and at least 16 hrs after their last exercise bout. RMR was meas between day 7 and day 10 of the S's menstrual cycle. Body composition was determined using the hydrostatic weighing technique; MVO_2 was determined by a graded exercise test on a treadmill. Hematocrit and hemoglobin were also meas. A food frequency questionnaire was employed to estimate participants' usual dietary intake. The results indicated no diff between the trained and untrained Ss in age, total calories consumed, wt and RMR (kcal/kgFFW) (trained=1.35 kcal/kgFFW ± .11; untrained=1.41 ± .15). The trained Ss had a lower %bf, greater MVO_2 and a greater absolute RMR (kcal/min) (trained=1.04 kcal/min ± .10; untrained=.94 ± .07). Food frequency questionnaire demonstrated that the trained individuals consumed a greater percentage of kilocalories as carbohydrates. In conclusion, this study did not support an independent effect of exercise training on RMR. When RMR was expressed as kcal/kgFFW/hr, the diff between the trained and untrained Ss was no longer sig. Exercise training seemed to influence RMR via changes in FFW.

83. CALNIN, R.J. The effect of moderate exercise on lipid profiles in a healthy college age population. MSc in Physical Education, 1991. (G. Hyner and R. Lyle)

50 sedentary healthy Ss, (10 M and 40 F), aged 18 - 25 yrs volunteered to participate in an exercise gp (EG), or a control gp (CG) for a period of 14 wks. The EG participated in a moderate aerobic exercise class 3 times a wk. Levels of total chol (TC), triglycerides (TG), high density lipoprotein chol (HDL-C), low density lipoprotein chol (LDL-C), and very low density lipoprotein chol (VLDL-C) were meas at baseline and after 14 wks of intervention. Following the intervention, no increase in fitness, as assessed by a step test, was observed in the EG. After adjusting for pre-exercise diff in blood lipids, higher HDL-C levels were observed in the EG at the end of the study. Other blood lipids did not differ. An anal of F only revealed that the EG was more fit at post-test compared to the CG. Post-test anal of lipid levels for F only, showed no sig diff in any of the blood lipids except HDL-C. While HDL-C remained unchanged in the EG through the course of the study it became lower in the CG. These results indicate that moderate exercise may not alter lipid levels in a favorable direction, particularly if pre-training levels are already in the desirable range.

84. MELICHAR, G. A. Health related motivational determinants in a worksite weight management intervention. MSc in Physical Education, 1990. (M. K. Tappe)

The purposes of this investigation were 1) to determine the wt related outcomes (wt and %bf) among participants in a worksite wt management prog, 2) to identify wt management motivational characteristics of participants in a worksite wt management prog, and 3) to determine if these motivational characteristics were related to decreases in wt-related outcomes as a result of participation in a 12 wk worksite wt management prog. In order to better understand the motivational characteristics of worksite employees with respect to wt management, personal investment theory was chosen to provide the theoretical framework for this investigation. With respect to wt related outcomes, 70% of the intervention participants realized wt losses ranging between 1 and 17 lbs. 80% of the participants realized bf losses ranging from .10 to 7.10%. The assessment of wt related outcomes according to sub-populations of employees found that hourly workers exp greater wt and % fat losses than hourly workers. Based on these pos wt related outcomes, it was concluded that the 12 wk wt management intervention was successful. Personal Investment Theory was found to be a useful model for the assessment of wt management motivational characteristics. Statistically sig motivational diff were found between M and F and hourly and salary workers. It was concluded that Personal Investment Theory can be practically applied to a worksite wt management intervention.

85. MINNIEAR, T.C. A study of measurement and evaluation procedures in Indiana elementary physical education programs. MSc in Physical Education, 1991. (J.K. Olson)

Meas and eval are bases for interpreting the learning and growing progress of individuals. The purpose of this study was to learn the procedures taken by IN ELE physical educators in the process of meas and eval. For this study, a total of 296 IN ELE schools were chosen at random. A 30-item questionnaire was mailed to the "Physical Educator" at each of the randomly selected schools. The questionnaire included 6 background information items, 1 PE requirement item, 13 items specific to meas and eval procedures, 3 items focusing on the future of meas and eval, and 7 items of specific interest to the IAHPERD Curriculum Task Force Committee. Of the 296 questionnaires that were mailed, 143 (48.3%) were returned. Results indicated that IN ELE physical educators do meas and eval their students. The physical, psychomotor, cognitive, and affective domains all were implicated as major areas of emphasis in grading by the participating educators. Results indicate that specific tests and procedures designed to meas and eval student learning and progress in each of the domains are varied throughout the state. This variety indicates that information is available to physical educators for the purpose of meas and eval. Based on questionnaire results, IN ELE physical educators are attempting to provide prog accountability through the use of meas and eval procedures. Further research is suggested as this area of PE is relatively unexplored.

86. MUKUNDAN, V. An assessment of selected risk management practices in local Indiana park and recreation departments. MSc in Recreation, 1991. (W.F. Theobald)

The increase in the no. of liability suits together with the increasing costs of liability insurance is causing park and rec dept to search for potential sources of protection for their agencies. One viable solution to this problem is risk management. This is a systematic management process for handling exposure to risk. The purpose of this study was to determine the kind and extent of compliance to selected risk management practices in local IN park and rec dept. For this study, a census of 291 local IN park and rec dept were chosen via a list of dept obtained from the IN Dept of Natural Resources. A 35-item mail questionnaire was distributed to a contact person at each dept, with directions to distribute it to the most knowledgeable individual in the dept concerned with risk management and safety. 3 mailings occurred and follow-up phone calls were also made. The instrument consisted of 19 risk management practice questions, 3 questions on liability insurance, 6 departmental background questions, 1 question on opinions of risk management, and 5 questions on the background of the individual completing the questionnaire. Of the 291 questionnaires distributed, 162 responses were obtained (56%), but only 154 (53%) questionnaires were utilized. Results indicated that only 17.8% of IN park and rec dept actually had written an enforceable risk management plans. On the contrary, park and rec dept appear to perceive that they have a high level of compliance to a selected no. of risk management practices. Dept seem to comply to risk management practices involving facilities, equipment, and supervision more so than those at the prog level. In addition, population size and operating budgets were found to be sig related to the level of compliance to risk management practices. Jurisdictions with less than 5,000 people were found to have a sig lower level of compliance to risk management practices. Based on the questionnaire results, although IN park and rec dept had a high rate of compliance to selected risk management practices, and they believe that risk management is important to the field of parks and rec, nevertheless, they seem not to have an organized management plan to deal with exposure to risk. It is recommended that further information be distributed and discussed with professionals in the area of risk management encouraging the formation of an organized and enforceable plan.

87. PAULA, E.A. Appraisal of the development of kicking behavior of preschool age children. MSc in Physical Education, 1991. (J.A. Maver)

44 preschool children participating in a 10 wk structured practice exp prog were divided into 2 age gps, 27 to 47 and 48 to 69 mos. On the first wk of the prog the children's ht was meas in cm. During the second and eighth wk, the children were video taped while performing 10 trials of place kicking and had ball velocity scores recorded simultaneously. The dependent variables for this study were standing ht, pre and post kicking velocity scores and component rating scores. A component rating scale was dev and refined. Data were anal using t-test and correlation procedures. The component data were reported in percentage of change that occurred in the component levels. The results indicated that preschool age children's kicking performance sig improved over the period during which they were participating in a structured mvmt prog, and that boy's kicking performances were superior to girls' within each age gp. A sig relationship between age and kicking performance was found for children in the younger age gp, but no relationship was found for the children in the older gp. There was a sig relationship between standing ht and ball velocity. However, only 29% of the variance was shared between ht and performance. It was concluded that participation in a structured mvmt prog had an effect on the dev of kicking behavior as the children kicked faster and demonstrated kicking patterns at a more mature level. However, the improvement observed during the 8 wk period might be attributed to some other factors such as growth and maturation. Improvement of kicking performance seems to be a function of age for the young children, but starting at the age of 4, improvement seems to be better explained as a function of skill refinement.

88. PIEPKORN, M.B. An examination of motivational differences between adults in structured and unstructured exercise programs. MSc in Physical Education, 1990. (M.K. Tappe)

The purpose of this study was to identify diff in motivational orientation regarding exercise among adults who participated in structured and unstructured exercise prog. The construct of personal incentives from Maehr and Braskamp's (1986) Personal Investment Theory and the construct of self-motivation from Dishman, Ickes, and Morgan (1980) were examined with respect to their ability to identify diff in motivational orientation among adult exercise participants. Data were collected from 249 adults from YMCAs in 2 large midwestern comm. The survey instrument included demographic information, self-reported exercise participation, health history, and scales designed to meas personal incentives for exercise and self-motivation. The statistical anal included descriptive statistics, Cronbach's alpha reliability anal, Pearson's product-moment correlational anal, stepwise multiple regression anal, ANOVA and chi-square anal. Sig diff were found in personal incentives between gender, age gps, and type of exercise prog. Upon examining gender, F scored sig higher on the appearance, affiliation, wt management, flexibility, and mastery incentives than M. M scored sig higher on the competition incentive than F. Adults exercised for diff reasons according to their age. The 17-29 yr olds scored sig higher than the 50-82 yr olds, and the 30-39 yr olds scored sig higher than the 40-49 and 50-82 yr olds on the appearance incentive. The 17-29 yr olds scored sig higher than the 40-49 and the 50-82 yr olds on the social recognition incentive. The 17-29 yr olds scored sig higher than the 30-39 and the 40-49 yr olds on the mastery incentive. The 40-49 yr olds scored sig higher than the 17-29 and the 30-39 yr olds on the flexibility incentive. Adults also exercised for diff reasons according to their type of exercise prog chosen. The unstructured exercise gp and the combination structured and unstructured exercise gp scored sig higher than the structured exercise gp on the competition incentive. The combination structured and unstructured exercise gp scored sig higher than the unstructured exercise gp on the appearance incentive. The combination structured and unstructured exercise gp and the structured exercise gp scored sig higher than the unstructured exercise gp on the affiliation, health benefits, and flexibility incentives. The construct of self-motivation did not prove to be useful in the study of motivational diff among adults. No sig diff was found in self-motivation scores by age, gender, or type of exercise prog. Personal incentives appeared to be useful in examining the motivational aspects of a health-related behavior such as exercise in adults.

89. SEIFRIZ, J.J. The relationship of perceived motivational climate to achievement-related affect and cognitions in a sport setting. MSc in Physical Education, 1991. (J. Duda)

The purpose of this investigation was to determine the relationship of perceived motivational climate to intrinsic motivation, attributional beliefs and perceived ability in a sport setting. Furthermore, this study examined the degree to which the dependent variables of interest are a function of situational goal structure, dispositional diff and/or an interaction of both environmental and personal factors. Ss were 105 M BB players recruited from 9 HS varsity BB teams in the Midwest. A questionnaire was dev to meas the perceived motivational climate, goal orientation and the dependent variables of interest. Perceptions of a mastery-oriented climate were shown to sig relate to reported enjoyment and the belief that effort is the main cause of success. Perceptions of a performance-oriented climate were found to correspond to the belief that ability plays a critical role in obtaining success in BB. The practical implications of these results are discussed in terms of fostering and/or maintaining optimally motivated athletes.

90. TAYLOR, A.M. Experimental investigation of the accuracy of self-reported body weight: Effect of informing subjects of weight measurement. MSc in Physical Education, 1991. (D.R. Black)

The purpose of this study was to experimentally investigate self-reported bw and factors affecting validity. Ss (n = 223) were recruited in a high-traffic public area and randomly assigned to one of two conditions: Informed Group (IG, n = 113) and Uninformed Group (UG, n = 110) of wt meas. A preliminary t test of the hypothesis that IG Ss, on ave, would report more accurately than Ss in the UG, revealed a sig result (M = 1.89, SD = 3.87 vs. M = 2.91, SD = 5.41, respectively; t (1,222) = 1.62, p = .05). However, a stronger indication of the treatment effect was that variability in the IG was sig less than that of the UG, (F(1, 222) = 1.95, $p < .0005$). 6 Ss in the UG were identified as being primarily responsible for this diff in gp variability. A regression of diff wt (observed minus self-reported bw) on observed wt revealed an atypical trend of constant accuracy across the wt range for IG Ss. On the other hand, with the noted 6 Ss removed from the anal, accuracy among the UG decreased as bw increased (t (214) = 2.06, p = .04). This trend among UG Ss was even stronger when all data were present (t (221) = 3.38, p = .0009). There were three important conclusions from the study: (a) informing Ss of impending weigh-in and refined questions about prior wt meas are convenient and inexpensive methods of ameliorating validity of self-reported bw, (b) these procedures are so effective that self-reported scores can be used as proxies for actual meas, and (c) these procedures help to control a tendency towards great variability in accuracy among a small no. of Ss and an overall tendency of Ss to be increasingly inaccurate as bw increases.

91. ZIEGENFUSS, T.N. The effects of continuous and intermittent exercise of equal work on post-exercise energy expenditure. MSc in Physical Education, 1991. (D.A. Sedlock)

The purpose of this study was to investigate the effects of continuous and intermittent cycle ergometer exercise on recovery energy expenditure. 12 Ss (M ± SD age, wt, and VO_{2max} = 22.8 ± 2.1 yr, 81.1 ± 7.1 kg, and 42.2 ± 5.0 ml/kg/min, respectively) cycled at a constant intensity (65% VO_{2max}) and intermittently (2 min at 40% VO_{2max} followed by 2 min at 90% VO_{2max}) until app 25,000 kpm of work was completed. The exercises were completed on separate days in a counterbalanced order. All Ss were fasted before each exercise condition (overnight) and remained fasted during the recovery periods. Baseline VO_2, RER, and core temp (Tc) were meas during the last 10 min of a 45 min seated rest period. Post-exercise VO_2, RER, and Tc were meas continuously until VO_2 achieved baseline status for 5 consecutive min. A sig diff was found for both magnitude (26.6 ± 9.9 vs. 38.2 ± 7.7 kcals) and duration (35.5 ± 11.8 vs. 47.8 ± 10.5 min) of the excess post-exercise VO_2 (EPOC) following the constant and intermittent exercise conditions, respectively ($p < .05$). This diff in magnitude persisted despite removing the influence of the first 5 min of recovery ($p < .025$). Post-exercise RER values meas at the end of EPOC indicated sig lower values following the intermittent exercise condition ($p < .0005$). A sig interaction was noted between the 2 exercise conditions in post-exercise Tc ($F_{66,1452} = 5.58$, $p < .0001$). The present findings support the contention of no sustained increase in energy expenditure following constant (65% VO_{2max}) and intermittent (2 min at 40% VO_{2max} followed by 2 min at 90% VO_{2max}) cycle ergometer exercise of equal work. The results also suggest, that, in contrast to constant intensity exercise, intermittent exercise may be more advantageous in maximizing energy expenditure and fat oxidation. Finally, the results suggest that factor(s) other than elevations in Tc are responsible for post-exercise VO_2 events.

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92. HUNTER, P.B. The effects of running with a functional knee brace on lower extremity joint moments of force in anterior cruciate ligament injured subjects. MSc in Physical Education, 1990. (P. DeVita)

Functional knee braces (FKB) are commonly prescribed for individuals with an anterior cruciate ligament (ACL) injury. Researchers have investigated on the mechanical efficacy of the FKB and the kinematics involved during dynamic activities. The purpose of this study was to investigate the joint moments of force in the lower leg while running with a FKB. 4 M and 1 F Ss, ages 20-25 yrs, with a history of unilateral ACL injury participated in this study. 2 conditions, normal running and running with an Omni OS-5 FKB with a 10 degree hyper-extension stop, were assessed. The exp set-up consisted of a force platform interfaced to a computer, a high speed camera, and a timing system to monitor running speed (3.35 and 3.83 m/s). 8 trials were collected for each S/condition, recording ground reaction force (GRF) data from the injured extremity, sagittal plane cinematographic data, and anthropometric data. The resultant kinematic, kinetic, and anthropometric data were combined in an inverse dynamic anal of the lower extremity to produce the net joint moments of force at the hip, knee, and ankle joints during the stance phase of running. A support moment was calculated as the sum of the individual joint moments. Ave and max JMFs from support, hip, knee, and ankle during stance and between trial JMF variability were compared using a T-test. There were no statistically sig ($p > 0.05$) diff observed in the support, hip, knee, and ankle JMF parameters or in between trial variability in the brace and no brace conditions. While the brace generated no JMF change in ACL injured Ss, it was noted that these individuals all exhibited diff JMF patterns compared to the normal population as described in the lit. The ACL injured Ss showed a higher and longer duration hip extensor moment, a shorter and lower knee extensor moment, and a higher ankle moment. These JMF patterns supported data reported in EMG studies which showed a greater output by the hamstring muscle gps in response to the knee injury. This study concluded that the effects of running with a FKB on ACL injured Ss were negligible on lower extremity JMFs.

93. MOSS, JR, R.I. A biomechanical analysis of patellofemoral stress syndrome. PhD in Physical Education, 1989. (P. DeVita, J. Hamill)

Researchers have shown that patellofemoral stress syndrome (PFSS) is a common malady of adolescent F athletes (DeHaven & Lintner, 1986; Outerbridge & Dunlop, 1975). However, few research studies have biomechanically anal and quantified variables suggested by the lit as being causal in this pathology. The purposes of this study were to investigate the relationship of selected anthropometric, strength, and kinematic variables to the incidence of PFSS in HS age F athletes and to develop a predictive equation that would screen those who may be predisposed to this trauma. 44 F students, age 14 to 18 yrs, volunteered to participate in this study. 15 of the Ss were asymptomatic, 14 had at least one knee affected by PFSS, and 15 served as a verification gp for the predictive anal. 4 categories of variables: (1) anthropometric, (2) quadriceps and hamstring strength, (3) pronation, and (4) dynamic quadriceps angle (Q-angle) were investigated. 3 predictive equations, dev using discriminant anal, were also formulated. Each equation was created from 1 of 3 sets of variables: (1) practical variables, those which were easily meas; (2) technical variables, those which were anal through the use of isokinetic strength testing equipment, high speed cinematography, and computer anal; and (3) the combined sets of practical and technical variables. The exp setup consisted of a treadmill, 2 high speed cameras, and a Cybex II dynamometer. For each S, 5 trials were filmed with S running on the treadmill at a 3.5 m/s pace. Anterior and posterior views were filmed so that pronation and dynamic Q-angle could be anal. 23 variables describing anthropometric, strength, and kinematic aspects of the Ss were anal. Diff of mean variable values were evaluated utilizing the Student's t test at the 0.05 level. Discriminant anal was used to create the predictive equations. Statistical anal revealed that 3 anthropometric variable mean value diff and 2 dynamic Q-angle variable mean value diff were statistically sig in this study. Wt, ht, pelvic width, and TMINQ (time to min Q-angle) mean values were all sig larger in the symptomatic gp. The mean value of QMAXPRO (Q-angle at max pronation) was sig smaller in the symptomatic gp. Discriminant anal disclosed 3 equations with percent predictabilities of 89% for the practical set, 85% for the combined set, and 65% for the technical set. It was suggested that the sig larger mean value for wt in the symptomatic gp would lead athletic trainers, therapists, and physicians to treat not only PFSS symptoms about the knee but also the probable cause for the pathology, excessive wt. Furthermore, results from the discriminant anal indicated that preventive meas may be taken through the use of an equation of practical variables that correctly predicted 89% of the Ss with PFSS in this study.

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94. HEIST, W. The effect of chronic exercise on the physiological responses to mental stress in cardiac patients. MS in Health Science, 1991, 84 pp. (S. Siconolfi)

Ss for this study were 6 M patients entering medically supervised chronic exercise prog. Pre-cardiac-rehabilitation tests were conducted during the lst and 2nd wks of the prog and post-cardiac-rehabilitation tests were admin during the final 2 wks of the prog. The Stroop Color-Word Test, a mental stress test, was admin while the Ss were at rest and during exercise. BP and HR were recorded prior to starting the test and each min during the 5-min test. A series of 2 x 3 ANOVA with repeated meas was used to anal changes in BP, HR, and RPP in response to stress as well as training. Sig ($p < .05$) diff were found among pretest, peak, and mean SBP and DBP, HR, and RPP recorded for SS prior to and during performances of the mental stress test while resting and while exercising. The pretest values were lower than the peak and mean values. There were no sig ($p > .05$) diff in SBP, HR, or RPP recorded for Ss before and after cardiac rehabilitation. However, sig ($p < .05$) diff were found between DBP meas recorded before cardiac rehabilitation and those recorded following cardiac rehabilitation.

95. KESKULA, D. Reliability of an isokinetic measurement protocol for the posterior rotator cuff musculature. MSc in Physical Education, 1990, 63 pp. (C.J. Redmond)

The researcher examined diff in torque generation of the posterior rotator cuff musculature meas concentrically and eccentrically, and determined the reliability of an isokinetic shoulder evaluation protocol. Ss for this investigation were 14 M coll students randomly selected from 30 volunteers. Injury free, dominant upper extremities were assessed. The mean torque values for concentric and eccentric contraction of the posterior rotator cuff musculature at test velocities of 60 and 180°/s were recorded for 2 test sessions 1 wk apart. A 3-way factorial completely repeated meas design was used to anal diff in torque generation of the shoulder. The mean torque values were sig ($p < .05$) greater for eccentric compared to concentric contractions for both test sessions. The mean torque values were sig ($p < .05$) greater at 60 compared to 180°/s for concentric contractions for both test sessions. The mean torque values were sig ($p < .05$) greater at 180 compared to 60°/s for eccentric contractions for the second test session. To determine the reliability of the shoulder evaluation protocol generalizability (G) coefficients were calculated. The reliability estimate for the protocol used was .94 for this sample of coll age M.

96. LI, J. The effect of short term EMG biofeedback on neck muscle relaxation for rotary pursuit performance. DPE in Physical Education, 1990, 152 pp. (B. Jensen)

Earlier researchers identified neck muscles as the best indicator of general upper body tension with people performing a rotary pursuit task. This researcher investigated the short term auditory EMG biofeedback training on neck muscle relaxation and its effect on rotary pursuit performance, as well as performance efficiency. 66 volunteer coll students were randomly assigned into 3 gps (El, E2, and C). All of the Ss performed a total of 9 blocks of rotary pursuit with 5 trials in each block. After the first block, both E1 and E2 gps received 10 min EMG biofeedback training on neck muscle relaxation. From block 2 to block 7, gp E1 received EMG biofeedback on neck muscle both during the rotary pursuit performance and the resting period between the trials; gp E2 received EMG biofeedback only during the resting period between the trials; and gp C did not receive any EMG biofeedback treatment. All the EMG biofeedback information was withdrawn during block 8 and block 9. The dependent variables in the study were rotary pursuit time-on-target score (TOT), performance EMG score (PEMG), resting EMG score (REMG) and performance efficiency index score (PEI). A 3 x 9 mixed-model repeated meas with a multivariate approach was selected for the statistical anal on each of the dependent variables. Sig gp by block interactions were found for TOT, PEMG, and REMG scores ($\underline{p} < .05$). Simple effect tests indicated that from block 2 to block 9, gp E1 had lowest EMG scores and gp C had highest EMG scores ($\underline{p} < .05$). As the result of low EMG scores, gp E1 appeared to have higher performance efficiency.

97. LONG, J. A documentary analysis of women's professional tennis in the United States. MS in Physical Education, 1990, 63 pp. (M. Murray)

This study was designed to trace the historical dev of women's professional tennis in the US during the 20th century. Due to the lack of written materials on the subject, personal interviews/correspondence were a major source of documentation. Interviews were conducted with the following persons due to their involvement in women's professional tennis: Billie Jean King, Ted Tinling, Bud Collins, and Joseph F. Cullman, 3d. The study was delimited to materials located via searching the Library of Congress, The International Tennis Hall of Fame, and information from correspondences. The intent of this investigator was to present the data in such a way as to emphasize the first women professional tennis players, the open era and its influence on the dev of the women's professional tour, and the progress which has occurred in women's professional tennis since its inception. The data were presented in the following manner: Chapter 4, Early Professionalism: The Suzanne Lenglen Tour, Chapter 5, 1970 to 1973: Dev of the Virginia Slims Tour, Chapter 6, Summary and Conclusions. As a result of the Virginia Slims tour a generation of girls may grow up believing they can fulfill their potential as athletes.

98. LOUIE, L. A factor analysis of selected badminton skills tests for college students. DPE in Physical Education, 1990, 174 pp. (B. Jensen)

This researcher examined the factor structure of the badminton skills for coll students in the domain of human motor performance. Ss for this study were 105 coll students who enrolled in the badminton skill classes in Springfield Coll. A theoretical model of the hypothesized dimensions of badminton skills for coll students was defined and was investigated by 4 factor-analytic models, including principal components anal, unweighted least squares anal, maximum-likelihood anal, and alpha factor anal. Both orthogonal and oblique rotations were performed with each of these 4 models. Of the 10 selected badminton skill tests, 7 were able to be utilized to formulate 3 common factors, namely: "long serve," "overhead strokes," and "short serve."

99. MATHESON, H. Cohesion of coacting and interacting female intercollegiate athletes. PhD in Physical Education, 1991, 132 pp. (M. Murray)

Ss for this study were 57 Div III coll F athletes from the lacrosse and BB teams (interacting), and tennis and swimming teams (coacting). Ss were admin the Group Environment Questionnaire (GEQ) (Widmeyer et al., 1985) 5 times during the season: pre-season, mid-season, post-season, after a winning situation, and after a losing situation. The GEQ meas 4 subscales of cohesion: Attraction to the Gp-Task (AGT), Attraction to the Gp-Social (AGS), Gp Integration-Task (GIT), and Gp Integration-Social (GIS). Two 2 x 2 ANCOVAs were used to anal the results of teams (coacting, interacting) by time (mid-season post-season) and teams (coacting, interacting) by outcome (win, loss). Preseason meas were utilized as a covariate in both anal. One of the coacting teams (tennis) recorded a 100% winning season; therefore, swimming only was utilized as the coacting team in the outcome anal. The results indicated a sig diff ($p < .05$ between interacting teams (lacrosse, BB) and coacting teams (tennis, swimming) for the subscale AGT, with coacting teams recording a higher level of perceived cohesion than interacting teams. A sig diff ($p < .05$) was also found for the GIT subscale in the Sport x Time interaction. Coacting teams scores showed greater changes in cohesion scores than those of the interacting teams. Post hoc Scheffe tests indicated midseason scores were sig ($F(1,44) = 4.94$), but postseason scores were not sig. Coacting teams AGT subscale score was sig diff ($p < .05$) from the interacting team score in the outcome anal. Sig diff ($p < .05$) were shown in the AGS (interacting) and GIT (coacting) subscales for Sport x Outcome interaction. Post hoc Scheffe tests indicated no sig diff between win and loss scores for either AGS or GIT subscales. Interpretation of the findings was discussed with relation to type of activity and closeness of competition. Type of activity and divisional classification may influence level and type of cohesion recorded as well as divisional classifications.

100. MILLARD, L. A comparison of valued outcomes of youth sport programs: Participants, parents, coaches, and administrators. MS in Physical Education, 1990. (M. Murray)

The Valued Outcomes Scale (Millard, 1990) was admin to 411 participants, 601 parents of participants, 64 coaches, and 40 administrators of youth coed soccer and coed football prog to compare value placed on having fun, playing fairly, skill dev, and winning as outcomes of those prog. Subject gps were treated separately through mixed design 2 x 4 ANOVAs to examine responses of Ss on the basis of gender and for 4 levels of valued outcomes: fun, fair play, skill dev, and winning. In the 4 subject gps, value placed on fun and fair play were found to be sig higher ($p < .05$) than for skill dev or winning, and value placed on skill dev was found to be sig higher ($p < .05$) than winning. No sig diff ($p < .05$) was found in value placed on the 4 outcome components by M and F Ss.

101. MURPHY, G. The attitude of physical education teachers in Ireland toward the Assessment in Second Level Teaching program. MS in Physical Education, 1990, 163 pp. (D. Potter)

The main objective of the researcher was to examine the attitude of a select gp of PE teachers, in the Republic of Ireland, toward the Assessment in Second Level Teaching (ASSIST) Prog. The Ss were teachers involved in the second stage of piloting of the ASSIST prog, as part of the Research project: Eval in PE. The meas instrument was a semantic differential scale. This yielded a likeability score and a utility score (which represented two dimensions of attitude) for a range of aspects of the ASSIST prog. A Wilcoxon test was used to compare means and the r between the likeability and utility scores were also calculated to explore the relationship between the two dimensions. There was a sig diff ($p < .05$) found between the total mean scores across all 22 items for the utility and likeability dimensions of attitude toward the ASSIST prog. The mean score for the utility dimension was higher than the mean score for the likeability dimension for each of the 22 individual items on the scale. The r for the relationship between the attitude scores of teachers to the likeability and utility dimensions of attitude toward the ASSIST prog, across all 22 items was sig diff from zero ($p < .05$). A pos r was observed between the utility and likeability scores for 20 of the 22 individual items. In general, the teachers found the ASSIST prog to be more useful than liked. The more useful the teachers found the prog to be the more they liked it.

102. NORRIS, E. The influence of menstrual cycle phase on exercise performance of women with symptoms of premenstrual syndrome. MS in Physical Education, 1990, 98 pp. (P. Hutchinson)

Max and submax exercise performance of 15 F, aged 18-30, who experienced mild, moderate, strong, or severe symptoms of premenstrual syndrome was studied during the follicular and luteal phases of the menstrual cycle. The Ss completed a max exercise test on a cycle ergometer, followed by two submax exercise tests at 40 and 70% of VO_2max during both the follicular and luteal phases. A 2 x 3 ANOVA with repeated meas on both factors (cycle phase and exercise intensity) was used to anal the data. No diff ($p > .05$) was found between the 2 menstrual cycle phases for VO_2, HR, RPE, and VE. The interation between cycle phase and exercise intensity was also not sig ($p > .06$) for these variables. Anaerobic threshold, assessed by respiratory parameters, and time to fatigue during the max exercise test was found to be not sig diff ($p > .06$) between the follicular and luteal phases. Thus, on the basis of this study, any variability in the meas variables of exercise performance cannot be attributed to the phases of the menstrual cycle of the subject gp studied.

103. O'DONOVAN, S.M. The knowledge of prevention and care of athletic injuries among physical education teachers and basketball, camogie and hurling coaches in the Cork area of the Republic of Ireland. MS in Health Science, 1990, 200 pp. (C.J. Redmond)

The current knowledge of athletic training and conditioning among teaching and coaching personnel in the Cork area of the Republic of Ireland was estimated in this study. The Ss were PE teachers, and coaches of underage (12-18 years) BB, camogie, and hurling teams. The returned questionnaires indicated a response rate of 66%. Responsibility for athletic injury care predominantly lay with the teacher or coach. A paucity of instruction in athletic injury prevention and care was noted in both the PE teacher preparation prog and in the coaching courses organized by the respective national sports organizations. Few Ss had attended athletic injury prevention and care courses, primarily because of the lack of availability of such courses. A large majority in each gp indicated willingness to attend a course. The anal of the knowledge test raised questions about the validity of this particular test for an Irish population. None of the Ss attained the 70% necessary to pass the revised version of the "Modified Inventory of Recent Knowledge in PE" (Rowe & Miller, in press). The gp mean score of 49% exhibited by the PE teachers was sig higher ($p < .05$) than the gp M scores of the BB (33%), camogie (22%), and hurling (17%) coaches, respectively. The preparation of teachers and coaches, from the Cork area of the Republic of Ireland, in the prevention and care of athletic injuries was shown to be inadequate by the results of this study.

104. OZOLS, M. Token economy system within an adapted physical education program to modify uncooperative behavior in trainable mentally retarded teenagers. MSc in Health Science, 1990, 116 pp. (M. Rau)

The purpose of the researcher was to use a token economy system within an adapted PE prog to modify uncooperative behavior in trainable MR teenagers. The target behavior was following directions which was defined as responding to a blown whistle within 5 s. 7 Ss (6 M and 1 F) participated in a baseline observation, a 13 day token economy prog, a post-treatment observation and a follow-up observation. During the baseline observation, the whistle was blown 3 times with 5 min intervals between each whistle sound. Post-treatment and follow-up used the same protocol. The token economy system consisted of giving chips to the Ss when they performed the target behavior. Depending on the no. of chips earned, they were allowed a back up activity time in which they performed a selected activity. An inter-observer reliability (IOR) was estimated for all 3 observations. An 80% IOR was required to determine an acceptable observation. The coefficients of IOR were for baseline observation .80, for post-treatment observation .85, and for follow-up observation .85. A Friedman ANOVA was estimated to compute diff in the baseline, post-treatment, and follow-up frequency score. There was a sig ($p < .05$) diff in the frequencies of occurrence in the baseline, post-treatment, and follow-up scores in the MR teenagers. This result is further evidence that a token economy system can be effective in increasing the frequency of desirable behaviors in trainable MR teenagers, and in maintaining that frequency of behavior over a period of time. Moreover, token economy systems can be successfully utilized in an adapted PE class to modify behavior in trainable MR teenagers.

105. SHERMAN, J.R. The effect of ipsilateral muscular endurance training on endurance retention in the detrained contralateral limb. MS in Physical Education, 1990, 62 pp. (J. Scheuchenzuber)

Ss in this study were 14 volunteer M employees from the Psychiatric Institute and the Southwest YMCA of Fort Worth, TX. All Ss participated in a 6-wk elbow flexion endurance training phase in which 3.9 kg of wt was lifted repeatedly to the beat of a metronome set at 80 bpm. The Ss lifted the wt with their nonpreferred arm until they were unable to keep pace with the metronome. Scores were recorded in sec. Ss lifted 3 days per wk with a day of rest between workouts. Following the training phase, Ss were matched by percent increase in endurance time and randomly divided into exp and control gps. A 6-wk detraining phase followed in which the control gp refrained from exercise while the exp gp trained the preferred arm according to the same training protocol used with the nonpreferred arm. Pretraining, posttraining, and detraining scores of the nonpreferred arm for both gps were anal using a 2 x 3 ANOVA with repeated meas on the last factor (training phase) to determine the effect of training the preferred arm on endurance retention in the detrained, nonpreferred arm. Results showed no sig diff (p > .05) between the exp gp and the control gp following a 6-wk detraining phase with respect to elbow flexion endurance scores of the detrained limb.

106. SHOLA, J. The relationship between trait and state anxiety and trait and state self-confidence in high school baseball players. MS in Physical Education, 1991, 82 pp. (M. Murray)

The researcher determined the interrelationships of the levels of competitive trait anxiety, cognitive and somatic state anxiety, trait self-confidence, and state self-confidence in M HS baseball players. Ss participating in this study were 34 M members of baseball teams from Agawam HS, Longmeadow HS, and Minnechaug Regional HS, in western MA, during the 1989-90 acd yr. All Ss were first admin the Competitive State Anxiety Inventory-2 (CSAI-2) and the State Sport-Confidence Inventory (SSCI). These inventories were admin on the day of a scheduled game, as close as possible before competition (competitive situation). Later during the same wk, all Ss were admin the Sport Competition Anxiety Test (SCAT) and the Trait Sport-Confidence Inventory (TSCI) prior to a practice (noncompetitive situation). Among the hypotheses tested, the researcher expected both pos and neg relationships. Pos relationships were expected to occur between scores on SCAT and CSAI-cog, SCAT and CSAI-som, TSCI and CSAI-sc, SSCI and CSAI-sc, and TSCI and SSCI; while neg relationships were expected to occur between scores on SCAT and CSAI-sc, and SCAT and TSCI. Pearson product-moment r were computed to determine if any interrelationships existed among the variables being tested. R were tested with the Fisher Z transformation method at p=.05 to determine whether r were sig diff from zero. Relationships hypothesized to be pos and neg were found. Sig (p < .05) relationships were found among SCAT and CSAI-som, TSCI and CSAI-sc, SSCI and CSAI-sc, and TSCI and SSCI. However, no sig (p > .05) relationships were found among SCAT and CSAI-cog, SCAT and CSAI-sc, and SCAT and TSCI.

107. VETRO, V. The effect of aerobic dance exercise and nutritional intervention on cholesterol levels. MS in Health Science, 1990, 153 pp. (P. Hutchinson)

Ss for this study were 27 F employees of an insurance company. They were randomly assigned to one of 4 gps: aerobic dance alone (AD), nutrition intervention alone (NU), aerobic dance and nutrition intervention (ADN), or control (C). The AD gp participated in a 10-wk aerobic dance class for 30 min 3 times per wk. The NU gp participated in a 10-wk nutrition prog which met once per wk and followed the American Heart Association guidelines. The ADN gp participated in both the aerobic dance and nutrition prog. The C gp was not involved in any exercise or nutrition prog. All Ss were pre- and posttested for changes in blood lipid variables (total chol, HDL-C, LDL-C, triglycerides), CV meas, and dietary intake patterns. An ANCOVA was used to anal the data. No diff ($p > .05$) were found among the 4 gps in any of the 18 variables under investigation. Multiple t-tests were performed to anal changes from pre- to posttest for any one gp. BW for the NU gp and %bf for the AD gp decreased sig ($p < .05$) from pre- to posttest. All other variables did not change sig.

108. WA, K.M. *A comparison of three hydrostatic weighing techniques: Without head submersion, total lung capacity, and residual volume.*
MS in Physical Education, 1991, 139 pp. (V. Paolone)

The purpose of this study was to compare the without head submersion (HWNHS) and total lung capacity (HWTLC) hydrostatic weighing techniques to the criterion meas of hydrostatic weighing at residual vol (HWRV). 54 healthy M volunteers served as Ss. Anthropometric meas (head circumference, head ht, head length, and head width), pulmonary meas (vital capacity (VC) meas both on land and in water and residual volume (RV) meas both on land and in water), bw on land and bw in water meas by the 3 hydrostatic weighing techniques were evaluated from all Ss. In an attempt to improve the accuracy of HWNHS, regression anal was used to predict actual head vol from spherical head vol ($R^2 = .27$, standard error of estimate (SEE) = 426 mL). Spherical head vol was estimated from head circumference. Actual head vol was determined from the diff between total body vol (TBV) estimated by HWTLC and HWNHS. Predicted head vol was then added to TBV determined by HWNHS. TBV for all 3 techniques was corrected by subtracting the appropriate lung vol (the sum of VC in water and RV on land for both HWTLC and HWNHS; RV on land for HWRV) and gastrointestinal vol. Mean body density (D_b) was 1.065 g/mL, 1.072 g/mL, and 1.072 g/mL for HWRV, HWTLC, and HWNHS, respectively. Mean %bf was 15.10%, 11.85%, and 11.89% for HWRV, HWTLC, and HWNHS, respectively. Sig diff in mean D_b and %bf were observed, with HWTLC and HWNHS overestimating D_b and underestimating %bf from HWRV. Although r between the 3 hydrostatic weighing techniques were greater than .85, the SEEs for predicting %bf meas by HWRV were 3.49% and 3.25% for HWTLC and HWNHS, respectively.

109. WATSON-BITAR, M. The relationship between bone mineral density and selected variables: An epidemiological perspective. MS in Physical Education, 1990, 76 pp. (F. Torre)

Ss for this study were 99 F patients between the ages of 29 and 89 referred by their physicians to Holyoke Hospital to have their bone mineral density (BMD) anal between Sept 1, 1989, and Feb 28, 1990. A Lunar DP3 bone densitometer was used to meas bone mineral content and bone width of the lumbar vertebrae L2-L4. Ss also completed an osteoporosis risk questionnaire. Data were collected from the densitometer printout and the questionnaire. Pearson product-moment correlation coefficients were computed to determine the relationship between BMD and each of the following: age, ht, wt, age of onset of menstruation, hysterectomy status, menopausal status, family history of osteoporosis, vitamin intake, smoking, no. of yrs smoking, packs of cigarettes/day smoked, and exercise. A sig ($p < .05$) r was found between BMD and age, the women with greater BMD usually were younger. A sig ($p < .05$) r was found between BMD and ht, the women with greater BMD usually were taller. A sig ($p < .05$) r was found between BMD and wt, the women with greater BMD usually were heavier. A sig ($p < .05$) r was found between BMD and hysterectomy status, the women with the greater BMD usually had not undergone a hysterectomy. A sig ($p < .05$) r was found between BMD and menopausal status, the women with the greater BMD usually were premenopausal. A sig ($p < .05$) r was found between BMD and exercise, the women who exercised 3 times per wk usually had a greater BMD. No sig ($p > .05$) r were found between BMD and any of the other variables examined.

STATE UNIVERSITY OF NEW YORK COLLEGE AT CORTLAND
CORTLAND, NEW YORK (T. STEELE)

110. EDKINS, C.E. The ability of undergraduate physical education majors to verbally identify and visually discriminate critical elements of select sport skills. MA in Physical Education, 1991. (T. Steele)

The purpose of this research, which was pedagogical in nature, was to determine whether undergraduate PE majors could improve their ability to anal select sport skills through the use of a personalized instructional videotaped prog. 8 undergraduate PE majors, all in their senior yr at SUNY Cortland, volunteered to participate in this study. A single subject multiple baseline research design with probes was utilized to anal 3 sport skills. These motor performances included a throwing skill, a hurdling skill, and a soccer kicking skill. The dependent variable was the Ss' anal ability. The independent variable was a personalized system of intervention on videotape. A generalization phase and a maintenance phase followed the intervention. The purpose of the generalization phase was to determine if the information obtained through the intervention phase transferred to an actual school setting. The Ss witnessed, on videotape, junior HS students performing the 3 sport skills. The Ss' task was to verbally identify the critical elements comprising the specific skill and to visually discriminate those elements as correct or incorrect. On the basis of the results from this study the following findings were discovered: (1) Under baseline conditions, the ability to verbally identify the critical elements for the sport skills was poor for all Ss. (2) Under baseline conditions, the ability to visually discriminate the critical elements as correct or incorrect was poor for all Ss. (3) Following intervention, the Ss sig improved their ability to verbally identify the critical elements. (4) Following intervention, Ss sig improved their ability to visually discriminate the critical elements as correct or incorrect. (5) The generalization phase of the study revealed that the knowledge obtained during the videotaped sessions did successfully transfer to the actual school setting. (6) The maintenance phase indicated that Ss successfully retained the knowledge to effectively anal select sport skills. (7) A direct pos linear relationship (r=.925) was discovered between the ability to verbally identify the critical elements and the ability to visually discriminate those elements as correct or incorrect. (8) The Ss, as consumers of the instruction, were extremely satisfied with the results and the overall prog.

111. ORMSBY, K.A. Perceptions and attitudes of deaf and hearing students in integrated physical education classes. MS in Education, 1990, 163 pp.

The problem was to examine the perceptions and attitudes of 101 undergraduate deaf and hearing students participating in integrated PE classes at the Rochester Institute of Technology (RIT). In addition, the communication mode used by the instructor was examined to see if this had any sig in the way the deaf and hearing students viewed one another. The secondary problem focused on the attitudes of deaf and hearing students participating in "team sport" classes vs. "individualized sport" classes. Data were collected by the admin of the Attitude Toward Participation in Integrated PE questionnaire. T-tests revealed that the hearing students viewed their instructor who signed for him/herself pos in promoting more interaction with deaf students and teaching in an integrated PE setting, than hearing students who participated in classes in which the instructor used an interpreter or no support services were provided for the deaf students in class. Chi square revealed that there was a sig diff (p<.05) between deaf students participating in "team sport" classes viewing their instructor more pos in promoting interactions among the hearing students and teaching in an integrated PE class, as compared to those students participating in "individualized sport" classes.

TEMPLE UNIVERSITY **(A. PAOLONE)**
PHILADELPHIA, PENNSYLVANIA

112. CUMMINGS, D.G. The differences in educational preparation and athletic experience between Division I and Division III athletic directors of National Collegiate Athletic Association member institutions. MEd in Physical Education, 1990. (B. Parkhouse)

The purpose of this study was to identify and compare the educ and athletic background diff between ADs at Div I and III NCAA institutions. A questionnaire, sent to randomly selected Div I and III ADs, required answers to questions concerning educ and athletic backgrounds. The results of this study will allow individuals interested in careers in athletic admin an opportunity to compare the educ and athletic backgrounds between Div I and III ADs in the endeavor to map out their career path. The results revealed that Div III ADs competed and coached in more sports than Div I ADs. The survey also indicated that Div I ADs have a more extensive business orientation over Div III ADS, while Div III ADs have a more comprehensive background in PE.

113. JAVENS, J.A. The effect of acupuncture TENS on second degree ankle sprains. MEd in Physical Education, 1988. (I.F. Kimura)

The purpose of this study was to investigate the influence a control treatment versus a control treatment plus acupuncture TENS (transcutaneous electric neural stimulation) had on recovery time of Ss with second degree ankle sprains. Ss were 7 M and F intercoll athletes between the ages of 18 and 25. All Ss had been diagnosed as having sustained a second degree ankle sprain. Treatment for the acupuncture TENS gp included ice bags, elevation, compression, and acupuncture TENS. The control gp received ice bags, elevation, and compression. The data were anal using BMDP program P3D, T-tests. The no. of treatment days between the acupuncture and control gps proved statistically sig ($p<.05$). The results indicate the acupuncture TENS gp returned to activity an ave of 1.8 days sooner than the control gp. This suggests that acupuncture TENS could be used as an additional modality for effective management of second degree ankle sprains.

114. SPOERL, J.J. Accuracy of perceived heaviness and perceived joint placement in normal and injured shoulder joints. MEd in Physical Education, 1991. (R.A. Berger)

The purpose of this study was to determine the accuracy in perception of heaviness and joint angulation of the shoulder joint as a function of joint position, internal and external rotation, percent of max muscle force, meas of perception, hand dominance, and joint injury. 16 individuals ($x= 29.1 \pm 11.39$ yrs, $x= 178.91 \pm 9.02$ cm, $x= 85.48 \pm 17.13$ kg) with a previous anterior glenohumeral joint

(AGHJ) dislocation volunteered for this study. The mean time since the last shoulder dislocation for the AGHJ gp was 11.19 ± 8.41 mos. In addition, 11 individuals (x= 31.6 ± 11.58 yrs, x= 170.87 ± 6.6 cm, x= 71.73 ±14.15 kg) with no prior history of AGHJ dislocation volunteered for the control gp. Perceived heaviness was meas by the reproduction technique with resistance loads of 50 and 75% of a max voluntary contraction (MVC), at internal and external rotations, for injured and noninjured limbs of AGHJ Ss, and for dominant and nondominant limbs of control Ss. Accuracy of perceived joint position was meas at joint angles of 65°, 90°, and 115° of shoulder rotation, for the injured and noninjured joints of AGHJ Ss, for the dominant and nondominant limbs of noninjured Ss, and by 2 diff meas techniques: matching and reproduction. The matching technique involved matching opposite limbs and the reproduction technique involved matching the same limb to a reference joint angle. A General Linear Model (GLM) 2 x 2x 4 factorial design compared diff between resistance loads of 50 and 75%, internal and external rotations, and among levels of injured, noninjured, dominant, and nondominant joints using perceived heaviness as the dependent variable. Sig diff were only found ($p<.05$) between loads and between rotations with 50% MVC and external rotation being more accurate. A factorial design repeated on the factor levels of injured and noninjured joints and crossed with factors of resistance load and joint rotation disclosed sig diff between injured and noninjured joints. The injured joint more accurately perceived heaviness. A GLM 2 x 3 factorial design with perceived joint placement as the dependent variable compared diff between the meas techniques of reproduction and matching, and among the injured joints of AGHJ Ss and the dominant and nondominant joints of the control Ss. No sig diff were found for any factor. Comparing joint angles and 4 levels of injured, noninjured, dominant, and nondominant joints with joint position as the dependent variable, a 3 x 4 GLM factorial anal disclosed sig diff for the factor of joint angle with 90° showing more accuracy. Based on the results of this study, the following were concluded: (1) The accuracy of perceived heaviness is a function of joint action, resistance load, and shoulder injury with external rotation, 50% MVC, and the injured shoulder being more accurate than internal rotation, 75% MVC, and the noninjured opposite limb. (2) The accuracy of perceived heaviness is not a function of hand dominance. (3) The accuracy of perceived joint displacement is a function of joint angle with the shoulder joint at 90° displaying more accuracy. (4) The accuracy of perceived joint displacement is not a function of meas technique, joint injury, or hand dominance.

TEXAS WOMAN'S UNIVERSITY **(A. UHLIR)**
DENTON, TEXAS

115. BLACKWELL, G.F. Early adolescents' knowledge and attitudes toward HIV and AIDS. MS in Health Education, 1991, 114 pp. (L. Kaplan)

This study was undertaken to determine if there was a diff in knowledge of and attitudes toward HIV/AIDS between F and M participants and to ascertain whether knowledge and attitudes were correlated within each gp and whether there were any relationships among ethnicity, gender, and HIV/AIDS-related knowledge and attitudes. The population consisted of 188 sixth-grade students in a rural school district in Ellis County, TX. The AIDS Survey for Students was admin at the beginning of the 1990 fall semester to students in the science classes. A one-way MANOVA with Hotelling's $\underline{T}^2$ showed that the F were sig more knowledgeable than the M. There was no sig diff concerning their attitudes., There was no sig r between knowledge and attitudes. To determine whether there were any relationships among gender, ethnicity, knowledge, and attitudes, the Spearman Rank Order Correlation test revealed 2 sig relationships: between gender and knowledge, with F more knowledgeable; and between ethnicity and attitudes, with blacks showing a more pos attitude than whites toward HIV/AIDS. Overall results indicate that early adolescents are knowledgeable about HIV/AIDS in general, though some misconceptions about transmission methods still exist.

116. CARROLL, K. Development of a predictive equation for maximal oxygen consumption on the step treadmill. MS in Kinesiology, 1991, 63 pp. (V. Ben-Ezra)

The purpose of this study was to develop a prediction equation for VO_{2max} on the step treadmill. VO_{2max} was obtained from 32 M and 32 F ages 18-35 yrs (x age = 25.3 ± 4.9 yrs). Step rate (SR) began at 40 steps/min and increased 10 steps/min every 2 min until VO2max was reached (x VO2max = 34.6 ± 5.6 ml/kg/min). A prediction equation was dev via stepwise multiple regression anal using the following as possible predictor variables: age, wt, body mass index, gender, fitness category, and HR at a step rate. Sig predictor variables were: HR3 (HR @ a SR of 60), fitness category, and gender, generating an equation:

$$VO_{2max} = 51.216 - .109(HR3) + 4.095(\text{fitness category}) - 1.916(\text{gender})\ \underline{R} = .796,\ \underline{SEE} = 3.37$$

A validation population of 27 M and F (x age = 23.4 ± 4.3 yrs) was used to examine the accuracy of the prediction equation. The r between actual and predicted VO_{2max} was $\underline{R} = .791$, $\underline{SEE} = 2.84$. It was concluded that this equation may be used to predict VO_{2max} from submax work on the step treadmill for this age population.

117. COUNTS, C. The effect of swim training on somatomedin-C levels in 8- to 10-year-old children. MS in Kinesiology, 1991, 71 pp. (V. Ben-Ezra)

This study investigated the effect of swim training on the plasma somatomedin-C (SM-C) levels of 8- to 10-yr-old children ($\underline{N}$ = 10). Caloric intake (KCAL-IN), caloric expenditure (KCAL-OUT), and training records were completed before and after 10 wks of swim training. Descriptive data of ht, wt, % bf, and age were collected pre- and posttraining. Venous blood was drawn before and after the training period and plasma SM-C was meas by radioimmunoassay (RIA). Ss swam within a competitive prog and maintained a training level of 1500 yds (60 min) 3 times per wk. A multivariate t-test showed no diff (p>.05) for SM-C, KCAL-IN, and KCAL-OUT. 3-day diet records showed no sig diff (p>.017) in caloric intake of 1801 Kcal pretraining and 1990 Kcal posttraining. Activity levels were similar (p>.017) with an estimated caloric expenditure of 1971 Kcal pretraining and 2005 Kcal posttraining. SM-C stayed relatively unchanged (p>.017) within the gp with values of 1.59 ± .78 U/ml pretraining and 1.86 ± 1.03 U/ml posttraining. Within the scope and limitations of this study, it can be concluded that with a diet of app 2000 Kcal, swim training within the yardage found in this study does not promote a decrease in plasma concentrations of SM-C in 8- to 10-yr-old children.

118. ELLERD, A. Variables related to knowledge levels of aging and planning for future aging of Texas high school graduates. MA in Health Education, 1991, 72 pp. (L. Kaplan)

Considerable research has been conducted on various age levels with respect to individuals' levels of knowledge of the aging process, but few researchers have examined if this is an influencing factor in affecting behavior such as decision making regarding the elderly. The purpose of this study was to determine HS graduates' levels of knowledge regarding the aging process and to determine if this knowledge was related to each of the following variables: Ss' ethnicity, their previous formal educ regarding the aging process, and whether they had lived with people 65 yrs old or older in their immediate households for 1 yr or more. In addition, the purpose was to examine the variables to determine whether they were predictive of a vote to support a political platform for the aged. Anal of the data from 95 respondents indicated that behavior such as voting may not necessarily be predicted by knowledge or other variables such as ethnicity, exp of living with people 65 yrs old or older in their immediate households for 1 yr or more, or previous formal educ regarding the aging process.

119. GARBE, K.C. Potential for osteoporosis in selected dancers. PhD in Health Education, 1990, 138 pp. (R. Tandy)

Eating attitudes, serum estradiol concentration, and bone mineral density were determined for 24 contemporary coll dancers and 32 nonexercising control Ss. All Ss were nonsmoking, white F, not currently taking prescribed medication, with no prior eating disorders. Data were collected using the following: a bone scan, a 7 ml blood sample, the Eating Disorder Inventory, the Bioelectrical

Impedance Anal machine, an activity level/menstrual status questionnaire, a 3-day diet record, and a demographic data form. The Ss were similar in age, age at menarche, and menstrual periods per yr. The major diff between the gps were that the dancers were taller, leaner, and weighed less than the controls. There was no sig diff in serum estradiol concentration between the gps. Bone mineral density scores were similar for the dancers and controls at 2 radial sites. No sig diff was found between the gps on 7 of 8 subscales of the Eating Disorder Index. A sig diff ($p<.01$) was found between the dancers and controls on the Interpersonal Distrust subscale. A neg correlation ($\underline{r} = -.321, \underline{p} = .04$) was found between serum estradiol concentration and the radial 1/10 site. No correlation was found between serum estradiol concentration and the radial 1/3 site.

120. GARCIA, R. A comparison of grip strength in young athletes and nonathletes. MS in Physical Education, 1991, 73 pp. (B. Gench)

The investigator accumulated and assessed data to determine diff in grip strength between young F athletes and nonathletes. Secondary purposes were to determine instrument reliability and collect normative data. The 125 Ss were 12 to 18 yrs of age. Data were collected using Ss in the Denton Independent School District using a Jamar Dynomometer Model 2A3. Grip strength was tested three times for each hand on successive days. A 2 way MANOVA with repeated meas revealed a sig diff between F middle school and senior HS athletes and nonathletes. There was also a sig diff in grip strength between the middle school students and the senior HS students with the older students demonstrating greater grip strength scores. The Jamar Dynamometer Model 2A3 proved to be a reliable instrument in meas F grip strength (r=.93).

121. GARRISON, D.R. Occupational stress and job satisfaction related to management styles of American- and Japanese- owned companies in America. PhD in Health Education, 1991, 130 pp. (L. Kaplan)

Occupational stress and job satisfaction are of concern to many gps: HE educ, HE professionals, corporate executives, and managers. The impact of various management styles, including the Japanese management style, has been debated. This study was conducted to evaluate the diff in the occupational stress and job satisfaction levels of employees of a Japanese-owned and -managed company (Company J) and of an American-owned and -managed company (Company A). Both companies were located in the north TX region. A total of 97 usable responses to questionnaires was received; 48 from Company A and 49 from Company J. Anal of the data indicated that the employees from Company J exp greater occupational stress than those from Company A with regard to 8 of 15 stress subscales. Sig results were obtained for 3 of the 15 stress subscales when anal by ANOVA with interaction. Exempt employees of Company J reported greater job stress than exempt employees of Company A and nonexempt employees of Company J. Exempt employees of Company A reported less job stress than their nonexempt co-workers. Sig r were found among the 5 subscales for job satisfaction and the 15 subscales for occupational stress.

122. GRUMBT, W.H. The effects of 24 weeks of resistance training on voluntary strength, muscle hypertrophy, and skeletal fiber characteristics in elite male and female body builders.
PhD in Kinesiology, 1991, 219 pp. (V. Ben Ezra)

The purposes of this study were as follows: first, to determine the effects of 24 wks of resistance training on the variables of absolute strength (AS), relative strength (RS), uncorrected/corrected flexor (biceps brachii and brachialis) cross-sectional area (CSA), uncorrected/corrected biceps brachii CSA, fast-twitch (FT) fiber CSA, slow-twitch (ST) fiber CSA, mean fiber CSA, percent fiber distribution (percent FT and ST fibers), flexor/biceps brachii fiber number, and percent noncontractile tissue (NCT); second, to determine gender diff in regard to these variables; and third, to investigate correlations of these variables in regard to expressions of strength and muscle/fiber hypertrophy. Voluntary strength was tested on an isokinetic dynanometer at elbow angles of 70 degrees, 90 degrees, and 120 degrees and expressed as absolute strength (uncorrected for any variable) and RS (corrected flexor CSA/mean fiber CSA X height). Muscle CSA was meas by computerized tomography (CT) scanning. Fiber distribution and CSA were determined from 2 biopsies taken from the same site of the biceps brachii. Fiber number was determined by dividing muscle CSA by mean fiber CSA corrected for percent NCT. Percent NCT was determined from a 121 point, point counting procedure. Biopsies were conducted at the beginning and end of the study, while the remaining tests were conducted at the beginning, middle, and end of the study. 5 M and 5 F elite body builders served as subjects with each performing identical workouts twice a week. Results showed that training produced a sig decrease in relative strength, while all the remaining variables remained unchanged. M had sig greater AS, uncorrected/corrected flexor CSA, uncorrected/corrected biceps brachii CSA, FT fiber CSA, ST fiber CSA, and mean fiber CSA than the F. F had sig greater percent noncontractile tissue. No gender diff were found for RS, fiber distribution, and fiber number. Of the 17 correlations performed, the following four were found to be sig: (a) flexor CSA and AS, (b) flexor CSA and RS, (c) FT fiber CSA and biceps brachii CSA, and (D) mean fiber CSA and biceps brachii CSA. Both gps had sig greater FT fiber CSA than ST fiber CSA, and reacted to the training in a similar manner. It was concluded that once body builders have reached elite status, 24 wks of additional training offers "limited potentials" for increases in strength or muscle/fiber hypertrophy.

123. GUSTAFSON, R.P. The role of diet and exercise in weight control in obese women: A meta-analysis. PhD in Physical Education, 1991, 209 pp. (B. Gench)

The purpose of this study was to investigate the role of exercise and/or diet protocols on body comp in obese women. Effect sizes were computed using the M and SD reported in each study; these were corrected for bias. A lit search located relevant journal articles and dissertations. Studies were coded based on the methodological features of age, treatment length, treatment mode, design feature, reported sig of the study, and menopausal state. 12 studies yielded 61 effect sizes for wt, %bf, fat (kg), and lean bw. The composite effect sizes for wt, %bf, fat (kg), and lean bw were -0.09 (p = .37), -0.30 (p = .02), 0.50 (p = .04), and -0.08 (p = .47), respectively. Because of the methodological delimitations established for this study, only a small no. of studies were included in the meta-anal. The results of this investigation demonstrated that a wt control prog of diet alone, diet plus exercise, or exercise alone will have similar effects on wt and lean bw in obese women. It also appears that a wt control prog of diet plus exercise or exercise alone will result in a lower %bf than will a wt control prog of diet alone.

124. HANDYSIDE, B.J. An in-season upper-body strength program for female middle school basketball players. MA in Physical Education, 1990, 103 pp. (C. Sanborn)

The purpose of the study was to examine the effect of an 11 wk in-season upper-body strength prog, which utilized the athlete's bw as resistance. The Ss (N = 40) were 2 diff eighth grade F BB teams from the Plano Independent School District. Data were collected on no. of chin-ups performed, no. of push-ups performed, grip strength, 1-RM bench press strength, and 1-RM seated pulldown strength. A MANCOVA found sig (p < .05) diff between the exp and control gps on the bench press, seated pulldowns, push-ups, and chin-ups. A multivariate t test found no sig diff between the 2 gps on grip strength. The in-season strength prog that utilized the athlete's bw as resistance produced sig improvement in upper-body strength.

125. HOOGE, N.C. Effects of rational behavior training on attitudes of rehabilitation support personnel. PhD in Health Education, 1991, 76 pp. (R. Tandy)

This study was designed to meas positive changes in attitudes and cognitive distortion, of support rehabilitation personnel of the TX Rehabilitation Commission, after training in Rational Behavior Therapy (RBT). The study was conducted during the summer of 1990 with 22 F Ss ranging in age from 24 to 52 yrs. Educ level was 13 grades, with mean yrs of work with the TX Rehabilitation Commission and in comparable work, the same, at 7.6 yrs. The Wilcoxon matched-pairs signed-ranks test, used for both instruments, showed high sig for two of the Bloom Sentence Completion Survey's (BSCS) seven individual tests used to meas pos attitudes. These were Psychological and Physical at the $p<0.007$ level. The Dysfunctional Attitude Scale (DAS) scores indicated a sig decrease, at the $p<0.001$ level, in cognitive distortion following RBT intervention. An additional finding was that the training helped most those individuals scoring highest in cognitive distortion. Of the upper half of the Ss, 91% improved after training. The Spearman rank correlation coefficient, meas correlation between the two instruments (the DAS and the 7 individual tests of the BSCS), determined that only one of the individual tests of the BSCS, Psychological, correlated with the DAS.

126. KENNEDY, S.O. A biomechanical analysis of children's balance behavior: An investigation of balance theory. PhD in Physical Education, 1991, 261 pp. (J. Wilkerson)

The purpose of this study was to investigate the mechanical aspect of balance behavior during nonlocomotor assessment. Secondary purposes were (a) to determine kinematic and temporal similarity and dissimilarity among 3 balance tasks, (b) to determine the predictive relationship of 7 independent variables to the dependent variable time-on balance, and (c) to determine the viability of a 5 level balance skill continuum paradigm. One temporal and 7 kinematic variables were observed through the video analysis of 72 children between 108 and 143 mos of age screened for ave or above ave orthoptic and refractive vision while performing 3 static balance tasks. The tasks were (a) single leg stand (SOL), (b) tandem stand on rail (TND), and (c) tip-toe balance stand (TTB). Ss were filmed in the critical plane of mvmt, that exhibiting the greatest mvmt, using a Panasonic video camera at 30 fps and a shutter speed of 1/1000 s. Variables observed were (a) time-on-balance, (b) direction of loss of balance, (c) ave position of the line of gravity relative to the base of support, (d) vertical displacement of the center of gravity, (e) trunk rom, (f) SD of the line of gravity, (g) extreme recoverable line of gravity, and (h) extreme recoverable angle of stability. Film data were reduced using VuTech Freez Frame to capture video images and the TWU Film Anal System developed by Noble, Zollman, and Yu (1988) modified by Zimmermann (1990). Descriptive statistics were computed and compared for each variable across tasks. Diff among tasks were examined using MANOVA with repeated meas. Mechanical task specificity, particular to time-on-balance, direction of loss balance, SD of the line of gravity, and the extreme recoverable line of gravity were reported. Correlational anal and factor anal illustrated that, although generally low, for each task, sig relationships among variables existed. Using a stepwise multiple regression the effectiveness of the exp variables to predict time-on balance was shown. The SOL and TTB tasks were most similar and the TND most diff. A continuum of performance from most to least difficult was suggested across tasks. The TTB and SOL using time and direction of loss discriminated best for weak balancers. The TND discriminated best for the good balancers. The logic of the 5 level paradigm was supported; however the variables and tasks selected in this study were not sufficient to identify the middle levels of the paradigm. It was concluded balance tasks for nonlocomotor assessment are mechanically task specific and a continuum of balance ability was suggested. Although balance ability could be predicted by using time-on balance it can more adequately be determined by using a combination of time-on-balance, the direction of loss of balance, and the mechanical variables related to the line of gravity.

127. KERR, K.A. Differentiation of ethnic culture regions using Laban Movement Analysis: A study of dance in Bulgaria. PhD in Dance and Related Arts, 1991, 242 pp. (A. Lockhart)

The possibility that Laban Mvmt Anal, and specifically one of its components, Effort Anal, can be an important adjunct to current systems for distinguishing between and among dance culture regions was explored. Systems which have been used to categorize dance and to distinguish between dance culture regions were examined, with an emphasis on research in which Laban Mvmt Anal has been utilized. The present study was limited to Bulgaria. Films and videos of Bulgarian dances were reviewed and 2 dances from each of 4 geographically diverse regions were selected for anal. Selections were made to be as representative as possible. A computer prog was developed to anal and record the occurrence of up to 8 separate effort elements on a time-line and then produce a bar graph indicating the presence or absence and relative proportion of the effort elements. Two observers, one a Certified Mvmt Analyst, then used the computer program to anal the segments of dance which had been selected for study. The mvmt profile graphs provided both a clear visual record of the mvmt preferences shown in each dance and region and a means for comparing regional mvmt preferences. The graphs also provided a clear way to discuss the mvmt qualities of the dances themselves. Statistical anal yielded additional information about the dance observations. The r between the 2 observers was very high (r = 0.9682). It appeared the the diff between performances of the dances resulted more from regionality than from diff between the dances themselves. The F values (2.032 and 1.656) showed the diff to be sig at the $p<.05$ for one observer and at $p<.10$ for the other. It is probable that greater sig for both observers would have occurred had either a stratified sampling technique not been used to select dissimilar dances or had a larger sample of dances from each region been anal. It was concluded that this methodology utilizing Laban Mvmt Anal and mvmt profile graphs provides a valuable adjunct to current systems for distinguishing between and among dance culture regions, augmenting and expanding rather than replacing current systems.

128. LUGO, A.M. Sport socialization of cerebral palsied adolescents. MS in Physical Education, 1991, 195 pp. (C. Sherrill)

The purpose of the study was to determine which variables influence active sport involvement (ASI) of cerebral palsied adolescents. Ss were 112 CP adolescents (56 M and 56 F), ages 13 to 21 yrs, from 15 states. Data were collected by the Sport Interest Inventory developed by Greendorfer and Lewko (1978b) and modified for CP adolescents by Lugo and Sherrill (1987). Correlation and stepwise multiple regression procedures were used to anal the data. Variables meas by the inventory explained 34% and 41% of the variance in ASI for M and F, respectively. It was concluded that the only important variable in the sport socialization of CP adolescents is friends. The other variables (values toward sport, family, teacher/coach, opportunity set, age, sport classification, and age sport was first started) contribute little.

129. OWLIA, G.H. Influence of reinforcers on motorized bicycle on-task time of profoundly mentally retarded adolescents. PhD in Kinesiology, 1991. (R. French)

The purpose of this investigation was to examine the influence of audio and audio-visual reinforcers on the on-task time performance of PMR adolescents using the motorized bicycle ergometer. The Ss were 5 PMR adolescents (2 M, 3 F) between the ages of 15 to 17 yrs and IQs between 12 to 20. A multiple-treatment design was used to determine the diff in on-task time performance of PMR adolescents when audio and audio-visual reinforcers were introduced. The results of both visual inspection of mean scores and Friedman's ANOVA revealed that there was a sig diff between audio and audio-visual compared to no reinforcers on on-task time performance of PMR adolescents. However, there was no statistical sig diff between the audio and audio-visual reinforcers. It was concluded that audio and audio-visual reinforcers are both effective in increasing on-task time performance of PMR adolescents.

130. PATTON, N.W. The influence of musical preference on the affective state, heart rate, and perceived exertion ratings of participants in aerobic dance/exercise classes. PhD in Physical Education, 1991, 146 pp. (B. Gench)

This study was conducted to determine the influence of musical preference and familiarity on the affective state, HR, and RPE of participants in aerobic dance/exercise classes. The MAACL-R was used to determine affective state changes during aerobic dance/exercise classes performed to preferred/familiar and nonpreferred/nonfamiliar music. MAACL-R scores for affective state (Anxiety, Depression, Hostility, Positive Affect, and Sensation Seeking) were compared using a MANOVA (repeated meas). 2 separate repeated meas were conducted on mean HR and mean RPE to determine if any diff existed with treatments. No sig diff were found for any of the dependent variables. It was concluded that musical preference does not influence affective state, HR, or RPE. Ss noted that instructor support and enthusiasm were more important for enjoyment and adherence.

131. PIZARRO, A. Sport socialization of urban Costa Rican children. MS in Physical Education, 1991, 173 pp. (C. Sherrill)

The process by which urban Costa Rican children become socialized into sport was examined. Ss were 257 boys and 265 girls, ages 9 to 12 yrs, from 5 diff public schools from the urban area of the province of San Jose, Costa Rica. The Sport Interest Inventory provided separate scores for 1 dependent variable (active sport involvement) and 5 independent variables (values toward sport, family, friends, teacher, and opportunity set). 3 separate stepwise regression anal were computed for each gender in order to examine the hypotheses. The first anal included all variables, whereas the second and third anal examined the influence of 4 types of family members and same and opposite gender friends. It was concluded that the sport socialization process in Costa Rica is diff for boys and girls. Opportunity set and male friends are the most important sport socializing agents for boys, and values toward sport and mother are the most important sport socializing agents for girls.

132. POUNCEY, J.A. Factors associated with exercise adherence. MA in Physical Education, 1990, 149 pp. (C. Sherrill)

The relationship of self-motivation, personal variables, and adherence of 98 coll personnel, M = 42 yrs, to a worksite exercise prog were examined. Personal variables studied were gender, age, job category, worksite, %bf, and fitness profile. Data were collected using the Self-Motivation Inventory (SMI), the Fitness Profile, and an exercise adherence checklist inventory. Pearson product moment r found sig ($p < .05$) relationships between adherence and SMI (.23), %bf (-.39), fitness profile (.36), and gender (-.28). Multiple regression anal indicated that for adherence, %bf accounted for 14.88% of the variance; fitness profile accounted for 6.42% of the variance; and self-motivation accounted for 4.96% of the variance.

133. ROGERS-WALLGREN, J.L. The effect of verbal praise and sensory reinforcers on the level of independence on selected components of physical fitness tasks by profoundly mentally retarded youth. MA in Physical Education, 1990. (R. French)

Most profoundly MR individuals (PMR) are not physically fit when compared with their intellectually normal and mildly, moderately, and severely MR peers. An ideal fitness prog for the PMR individuals is one that effectively improves the level of physical fitness by maintaining a max effort on the part of the participant. Such a prog must be consistent, systematic, and include prompts, extrinsic reinforcement, and exercises that are specifically geared to the motor performance capabilities of the individuals. The purpose of this study was to examine the influence of systematically chosen sensory reinforcers on the abdominal strength/endurance, lower back and hip flexibility, and upper body strength/endurance of 12 PMR, ambulatory children, ages 10 to 18 yrs. A single subject AB design with a control gp was used to determine the diff in performance of physical fitness under the baseline condition of no reinforcement; and under the 2 exp conditions of verbal praise only and verbal praise plus preferred sensory reinforcement. Based on visual inspection of the data and use of the split-middle technique, verbal praise and sensory reinforcements plus verbal praise were not effective in increasing the level of independence on the 3 tasks in Project TRANSITION.

134. RUSSELL, L.M. Dental health attitudes and knowledge levels of rural and suburban Texas. MS in Health Science Instruction, 1991, 75 pp. (W. Cissell)

This study was conducted to meas and compare diff in dental HE knowledge and dental HE attitude levels between patients in a selected rural dental practice and those in a selected suburban dental practice. Using a descriptive survey method with a quasi-exp research design, dental HE knowledge and dental HE attitude levels were determined and compared in a convenience sample of 120 dental patients. Some demographic information was also collected and the data were interpreted using descriptive and inferential statistics. There were statistically sig diff in dental HE knowledge and dental HE attitude levels between the 2 dental gps. Diff in ave age level in each dental practice, educ levels, and diff between dental insurance and dental practice sites were all revealed; however, there was no statistically sig diff between M and F in dental HE knowledge and dental HE attitude levels.

135. SHEEHAN, L. Accuracy of a treadmill scoring system for prediction of coronary artery disease in female subjects. MS in Kinesiology, 1991, 78 pp. (C. Sanborn)

This study investigated the application of the Wasir et al. (1988) treadmill scoring system to predict coronary artery disease in a F population. Data were reviewed from RHD Memorial Medical Center. All Ss completed an exercise stress test and a coronary angiogram. A treadmill score was computed for each S using the Wasir et al. (1988) equation. The statistical results revealed no sig relationship (p < .05) between the treadmill scoring system and the presence and the extent of coronary artery disease. By discriminant anal, the only predictors of coronary artery disease in F were a history of myocardial infarction and the Ss' age, which correctly classified 60% of the population. In conclusion, the Wasir et al. (1988) treadmill scoring system cannot be used to predict the presence or extent of coronary artery disease in women.

136. STUMBAUGH, T.A. The effects of the Kids' Connection program on sixth graders' drug knowledge and self-concept. MA in Health Studies, 1991, 40 pp. (J. Baker)

The problem addressed by this study was to determine the effectiveness of Kids' Connection in terms of increasing drug knowledge, self-esteem, and positive drug attitudes. The purpose of the study was to identify the key criteria essential to a complete, effective prevention prog and to evaluate the Kids' Connection Prog's effectiveness as a curr to be added to the existing public school drug educ material. Students from an ele school in Denton, TX were used. Half of the students (n=9) were assigned to the exp gp, which received Kids' Connection in addition to the regular public school drug educ prog. The control gp (n=9) received only the regular public school drug educ. Both the exp and control gps were given pretests in knowledge and self-esteem before any drug educ was presented. At the end of the intervention, post-tests were admin. Anal of the data indicates there is a sig diff in the amount of knowledge gained by the group receiving the Kids' Connection curr.

137. SVEHLA, B. Grip strength profiles of elementary aged males and females. MS in Physical Education, 1991, 76 pp. (B. Gench)

The purpose of this study was to establish a normative profile of grip strength for healthy 9-, 10-, and 11-yr-old M and F. A sample of right-handed students, 321 M and 318 F, from Denton, TX, were tested for grip strength of both the right and left hands. Testing was done using a Jamar Dynamometer Model 2A3 and procedures recommended by the American Society of Hand Therapists. The statistical results revealed a sig diff ($p < .0001$) between M and F, and a sig diff ($p < .0001$) between the M and F for both the right and left hands. M had a higher grip strength than F. A sig diff ($p < .0001$) was also found between age gps and between the right and left hands among the age gps. Grip strength was shown to increase as age increased.

138. TANT, C.L. Segmental interactions of a three-dimensional soccer instep kick motion. PhD in Physical Education, 1990, 190 pp. (J. Wilkerson)

The purpose was to investigate the timing, sequence, and interaction of segments during a low drive, high drive, and max distance soccer instep kick. 8 M Division I intercoll soccer players were filmed from 2 views with 16 mm high speed cameras at 200 frames/sec. Films were digitized and the synchronized X, Y coordinates entered into the DLT computer prog for generation of 3D coordinates. The 3D coordinates were smoothed with a digital filter and entered into a prog based on the 3D linked model of the kicking leg. A one-way ANOVA with repeated meas was utilized to investigate the relative timing and angular velocities of the pelvis, thigh, and lower leg. A proximal to distal motion sequence with simultaneous motion occurring between the pelvis and thigh and sequential motion between the thigh and lower leg was observed. No sig diff were found between the relative timing of the segments during each kick which could indicate a common temporal structure for the soccer instep kick.

139. TEAGUE, S.L. The effects of weight loss on plasma cholesterol and lipoproteins among female participants in a residential wellness program. PhD in Health Education, 1991, 127 pp. (L. Kaplan)

This retrospective study investigated the relationships among adiposity, CV fitness, age, initial chol and lipoprotein levels, menopausal status, wt loss, and changes in chol and lipoprotein levels in adult F participants ($\underline{n} = 56$) who attended a 13-day residential prog. Matched $\underline{t}$ tests revealed sig ($p = \leq .05$) mean decreases from pretest to posttest in total plasma chol (TPC), low-density lipoprotein (LDL), and wt. Point-biserial r showed no statistically sig r between menopausal status and changes in TPC, HDL, and/or LDL levels, but the relationship between CV fitness and decreases in wt was sig ($p = \leq .05$). Pearson product moment r indicated a statistically sig ($p = \leq .05$) relationship between wt loss and changes in TPC. Pearson r found statistically sig ($p = \leq .05$) r between adiposity (meas as % bf) and wt loss and between age and changes in TPC and LDL levels. Finally, Pearson r found sig ($p = \leq. 05$) relationships between initial TPC levels and decreases in TPC; between initial HDL levels and decreases in HDL; and between initial LDL levels and decreases in TPC and LDL. For the Pearson r, the greater the initial levels of these components, the greater their decrease from pretest to posttest.

140. TOON, C.J. Body part identification and comprehension of spatial prepositions in handicapped and nonhandicapped preschool children. PhD in Physical Education, 1991, 166 pp. (B. Gench)

There were four purposes for the study: (a) to develop a valid, reliable, and objective assessment instrument for meas handicapped and nonhandicapped preschool children's comprehension of spatial prepositions (Snoopy's Space Game [Toon, 1991]); (b) to compare the performance of handicapped and nonhandicapped preschool children on the Brigance Receptive Body Parts Inventory (BRBPI) and Snoopy's Space Game (SSG); (c) to determine whether a relationship exists between identification of body parts and comprehension of spatial prepositions in handicapped and nonhandicapped preschool children as meas by the BRBPI and SSG; and (d) to compare the r value of the BRBPI and SSG for handicapped preschool children to that of their nonhandicapped counterparts. The Ss (N = 185) were 103 speech handicapped and 82 nonhandicapped children who ranged in age from 3 to 5 yrs. Based on the results of the statistical anal, it was concluded that (a) SSG is a valid, reliable, and objective assessment instrument for meas nonhandicapped preschool children's comprehension of spatial prepositions; however, it cannot yet be accepted as valid for use with speech handicapped preschool children; (b) the performance of nonhandicapped preschool children on the BRBPI ($\underline{p} < .0001$) and SSG ($\underline{p} < .0001$) is superior to that of their handicapped counterparts; (c) scores for both the speech handicapped and nonhandicapped children on the BRBPI and SSG increase gradually with age; and (d) there is a moderately pos relationship between identification of body parts and comprehension of spatial prepositions for both handicapped ($\underline{r} = .69$) and nonhandicapped ($\underline{r} = .45$) preschool children; however, the r value for these two meas is stronger ($p < .05$) for the handicapped children.

141. WAGNER, K.E. Overcorrection and timeout techniques to decrease time off-task during a gross motor performance of emotionally disturbed males. MA in Physical Education, 1991, 77 pp. (R. French)

The purpose of this study was to examine the effectiveness of overcorrection and timeout on decreasing time off-task of M who are emotionally disturbed during the performance of a selected gross motor skill. The Ss were 5 M (CA 6 to 10 yrs) who were emotionally disturbed as defined by P.L. 94-142. All of the Ss were enrolled in one of two self-contained classrooms in an ele school within the Dallas Independent School District. The Ss were chosen for the study based on their individual overhand throwing scores on the Test of Gross Motor Development and the continuous display of inappropriate behavior during their regular 45 min PE class over a 3-day observation period. Each S was randomly assigned an intervention, either timeout or overcorrection, for each of 12 15-min gp sessions. The S engaged in the intervention only after he was verbally reprimanded once for displaying inappropriate behavior during the testing session. Data were collected off of a video tape of each session and the time off-task was calculated for each S. The data were anal by the Wilcoxon nonparametric statistical procedure. This procedure yielded no sig diff between the baseline, interventions, or control sessions. The actual time off-task, statistically and from visual inspection, supports the original hypothesis: There is no sig diff between overcorrecton and timeout techniques in decreasing inappropriate behavior. However, the frequency of the overcorrection intervention was lower than that of the timeout intervention.

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142. BELCHER, L.H. The effects of dance team participation on female adolescent physical fitness and self-concept. EdSpec in Physical Education, 1987.

The purpose of this study was to determine to what extent F physical fitness and self-concept are affected by dance team participation in HS. 8 dancers were tested once prior to and once 4 mos after dance team participation. 8 age, wt, ht, grade, and race matched participants from PE classes were tested once at the same time as the second dance team test. Physiological tests were $VO2_{max}$, sit and reach, one-rep max bench press, skinfolds, and hydrostatic weighing. Self-concept tests were Coopersmith Self-Esteem Inventory, TN Self-Concept Scale, and Body Cathexis Scale. Dependent one-tailed T-tests were run to determine diff between dance team pre- and post-tests and control and dance team post-tests. Dance Ss increased $VO2_{max}$ and one-rep max bench press as well as improved their body comp as evidenced by a sig decrease in total skinfolds and a near sig decrease in %bf. The dance team had a sig higher $VO2_{max}$ than controls. No other sig diff were seen between gps. Dance team participants sig improved physical self and social self on the TN Self-Concept Scale. No other sig diff were seen. A factor that may have affected the self-concept results in this study was low dance team status, due to a combination of unsuccessful previous dance teams and a losing football season. Within the limitations of this study, these results indicate physical fitness is improved because of dance team participation; however, self-concept seems to be affected only minimally, if at all, more than participation in a PE class.

143. BRASHER, J.D. A height-adjusted step test for predicting maximal oxygen consumption in males. MSc in Physical Education, 1990.

A suitable ergometer that is generally favored for estimating $VO2_{max}$ under field conditions or in environments where testing equipment is limited is the step test. Recently, a mathematical model was reported to standardize the ht of stepping for individuals of various hts. The purpose of this study was to validate this model using a 3-min, single-stage step test for predicting $VO2_{max}$ in M. 33 M aged 18 to 47 yrs (mean = 28) performed each of 3 rate-specific step tests and a Bruce treadmill test. Direct meas of $VO2_{max}$ obtained from the treadmill test were correlated with the 15-sec recovery HR after 3 diff step tests executed at stepping frequencies of 22, 26, and 30 ascents/min. The correlation coefficients for prediction of VO2max from the recovery HR and directly meas VO2 were 0.72 at 22 and 30 ascents/min and 0.81 at 26 ascents/min. Each relationship was statistically sig at the $p < 0.001$ level. The step test described in this study provides an effective predictor of VO2max in M and can be used when more complex methods of testing are unavailable or not feasible.

144. DREMSA, C.J. Handrail support versus free arm swing treadmill fitness test. MA in Physical Education, 1986.

The purpose of this research was to compare energy expenditure during handrail support (HS) and free-arm swing (FA) treadmill exercise. 10 young and healthy Ss exercised on the treadmill to exhaustion 3 times, once with free-arm swing and twice with handrail support. Order of the tests was randomized. A modified Bruce protocol was used. An open-circuit computerized system was used to determine VO2 while HR was monitored on an EKG unit. The amt of wt supported on the handrails at each work level was determined from a precalibrated cable tensiometer. All Ss obtained a higher work level during HS with the ave diff 1.5 stages. VO2 and HR were statistically higher during FA. This was especially the case as speed and grade increased with a diff of 15 beats/min and 7.0 ml 02/kg/min found at the 4th stage (3.4 mph and 14% grade). Changes in estimated workrate also increased as work levels became more diff with the power diff at 1.7 mph, 10% grade only 1 WATT and at 3.4 mph, 14% grade 4.4 WATT. A regression equation predicting VO2 from work done during handrail support was dev ($r = .8609$; VO2-HS = .6574 + .0098 (Work-HS). The results of this study indicate work capacity may be overestimated if VO2 is predicted from established treadmill HR data. This could be potentially dangerous in establishing individual exercise prescriptions. Therefore, corrections in establishing VO2max should be made if handrail support is to be used.

145. DUNNAM, L.A. Comprehensive one-year physical, physiological, and biochemical evaluation of collegiate female volleyball players. MA in Physical Education, 1987.

The purpose of this study was to determine comprehensively how seasonal training affects physical, physiological, and biochemical parameters of highly competitive coll F VB players. 4 UAB VB players were tested initially before the onset of their off-season conditioning prog and at the completion of each phase of training. Within the conditioning prog, the off-season focused on dev muscular strength and endurance, aerobic capacity, and flexibility. The preseason focused on speed, agility, vertical jump, and anaerobic capacity, while the in-season basically focused on maintaining fitness. At each of the 4 testings the following parameters were assessed: bw, circumference, %bf, flexibility, vertical jump, power index, 100-yd dash, sit-up muscular endurance, max bench and squat strength, isokinetic hamstring/quadricep ratio, agility, anaerobic capacity, VO2max, total chol, triglyceride, protein, calcium, and phosphate. As expected, fluctuations in fitness were seen from phase to phase; however, the overall effect of training was as follows. Mean bw stayed constant throughout the yr, while mean upper arm meas increased and mean chest and waist meas decreased. Mean abdomen, hip, thigh, and calf girths stayed nearly constant. Overall mean %bf decreased throughout the yr, while mean flexibility and muscular endurance increased. Mean speed decreased as mean anaerobic capacity increased slightly over the yr. Mean VO2max, bench press, squat press, hamstring/quadricep ratio, and agility all increased. Mean vertical jump and power stayed app constant. All biochemical values were within the reference range. Results indicate that the conditioning prog was successful in improving many parameters while unsuccessful in improving speed, anaerobic capacity, and vertical jump. Therefore adaptations in the training prog should be made to improve ability in these parameters.

146. KALB, J.S. Weight training economy as a function of intensity of the squat and overhead press exercise. MA in Physical Education, 1987.

The purpose of this investigation was to study the relationship between exercise intensity and wt training economy. A major goal of this study was dev of a practical model for prediction of metabolic cost of wt training exercises from the vertical external work performed and the wt training economy. 7 Ss performed squat and seated behind the neck press exercises at 60% and 80% of one rep max (1RM). Addition of the net exercise VO2 to the net recovery VO2 provided an estimate of the metabolic cost for the exercise. Estimation of work performed was accomplished by calculation of vertical external work (VEW). The wt training economy was then calculated from these values (wt training economy = kcals consumed * VEW-1). The squat was sig more economical than the overhead press ($p = .002$), and exercise at 60% 1RM was more economical than exercise at 80% 1RM ($p < .001$). Correlations between VEW and kcals consumed at each intensity ranged between .85-.98. It was determined that estimation of metabolic cost of wt training exercise must take into account not only the vertical external work accomplished, but also the intensity of the exercise (% 1RM). The vertical external work performed on the bar (excluding work performed on the involved body segments) appears to be as accurate as the total vertical external work value in prediction of metabolic cost of the squat and overhead press exercises. Use of the wt training economy values obtained in this study for prediction of metabolic cost will provide values with 4.2%-15.8% prediction error, depending on the exercise performed.

147. KEKES-SZABO, T. Energy cost of knee flexion and extension during steady-state exercise. MSc in Physical Education, 1989.

This study was undertaken to compare the energy cost of knee flexion and extension during steady-state exercise. 10 Ss performed knee mvmts at 25% of one rep max (1RM) at a speed of 10 rep per min for 5 min. VO_2 was meas during and following the exp. Arterialized capillary blood was anal for lactate both prior to and at 4.5 min following exercise. Flexion and extension meas were separated by at least 1 day. Metabolism was estimated by assuming 5 kcal of energy was released for each liter of O_2 used. Total external work was calculated by summing the work performed on the wt, bar, and lower legs. Total economy was calculated by dividing kcal by external work performed (kcal x $Joule^{-1}$). The knee flexion produced a sig ($p < .007$) higher metabolic rate (2.15 kcal per min) compared to the energy requirement for the extension (1.78 kcal per min). The total flexion economy was sig ($p < .001$) lower (5.62×10^{-3}) than the extension economy (2.82×10^{-3}). Lactate meas did not exceed 1.55 Mmol x 1^{-1}.

148. MELTON, S.L. Rheumatoid arthritis patients cardiorespiratory responses during bike riding versus water running MA in Physical Education, 1989.

The purpose of this study was to compare the VO_{2max} and HR response during dry land bicycle ergometry and Wet Vest water running in individuals with rheumatoid arthritis. A second purpose was to determine whether the level of pain and RPE during exercise is diff at 60% VO_{2max} and VO_{2max} in the water versus on the bicycle. 8 Ss did a graded max exercise test on a stationary bike and in the water wearing a Wet Vest, while VO_2, HR, pain, RPE, ventilation, respiration rate, tidal volume, and respiratory exchange ratio were monitored. No sig diff were seen between the bike and water exercise for VO2max, max HR, RPE at 60%, or pain. However, a sig diff for max RPE was found, with bike max RPE 94% of water max RPE. The max ventilation in the water was 79% of the max value obtained on the bike, the max respiratory rate on the bike was 82% of that in the water, while the max tidal volume in the water was 68% of that on the bike. The max respiratory exchange ratio was seen in the water, with the bike value 80% of the water value. The ventilation, tidal volume, and respiratory exchange ratio diff were all sig, but the respiratory rate only approached sig at $p = .06$. In both forms of exercise, Ss were able to reach training levels as set by the ACSM. In conclusion, it is believed that Wet Vest water exercise is an excellent mode of exercise for individuals with rheumatoid arthritis. It allows them to reach the needed training levels, as established by the ACSM, within an exercise environment that may be less painful and more comfortable than a stationary bicycle.

149. MITRANO, N.J. The validity of accelerometer readings in three orthogonal planes for estimating metabolic rate during aerobic dance. MA in Physical Education, 1987.

The purpose of this investigation was to determine the validity of accelerometer readings in 3 orthogonal planes for estimating metabolic rate during aerobic dance. 6 M and 14 F ranging in age from 21 to 30 yrs served as Ss. Ss were tested on the treadmill for VO2max using a computerized open circuit system. A modified Douglas bag technique was used to determine VO2 while the Ss performed 3 six-min aerobic dance routines at diff intensities. A listwise deletion and listwise addition multiple regression was run on all pooled data. A Pearson product-moment intercorrelation matrix was run for both pooled (all work levels combined) and unpooled data. The results of the correlational anal of pooled and unpooled data showed the vertical accelerometer to be the best indicator of VO2 with the side horizontal accelerometer second, and the front horizontal accelerometer a poor third. The results of the multiple regression anal for predicting VO2 from the 3 accelerometer readings resulted in 3 sig equations for estimating VO2. Results were identical for both the listwise deletion and listwise addition anal. Only a small improvement in the R2 is seen when the side horizontal accelerometer is added to the equation. Virtually no improvement is seen with the addition of the front horizontal accelerometer. In conclusion, the vertical accelerometer proved to be only moderately successful in estimating metabolic rate. There was little improvement in adding the horizontal accelerometer.

150. NAPP, J.P. Characteristics of adherence and dropout groups for a company sponsored off-site fitness program. MSc in Physical Education, 1989.

The purpose of this study was to examine the characteristics of employees adhering to and dropping out of a company sponsored fitness prog offered off site through the YMCA. 542 employees from a large electrical utility enrolled voluntarily for a 30 mo pilot prog of physical fitness at YMCAs in Birmingham and Mobile, AL. Fitness testing was performed on entry to the prog and repeated every 6 mos. To encourage participation, financial incentives were used, based on the achievement of 5 fitness goals. A post-hoc anal of characteristics of adherents and dropouts was performed on baseline data from fitness assessments and health risk appraisal items. A 44% overall dropout rate occurred with 37% of M and 67% of F dropping out. M dropouts were sig older; had higher BP and resting HR, greater %bf, lower muscular endurance, lower self-reported levels of prior physical activity, lower ratings of physical health, and poorer family ties; and were more likely to smoke and to have a pos family history of heart disease when compared to adherents. F dropouts were sig lower in muscular endurance and self-reported level of physical activity when compared to adherents. Many of the trends for F dropouts were in the same direction and same magnitude as those of the M but lacked statistical sig because of the smaller no. The data on this population support previous findings from a variety of exercise prog settings, showing that the profile of a dropout and that of an adherent are sig diff in certain meas. Many companies are investing in both on site and off site physical fitness prog as an intervention strategy to reduce hypokinetic disease risk and claim cost savings. The cost saving potential of company sponsored fitness prog is reduced by the dropout of the high risk individual. Corporate fitness directors face the unique challenge of offering a cost effective prog for all employees while maintaining participation of high risk gps. This task appears difficult because the high risk individual is often the most dropout prone.

151. NAVIA, A.M. Comparison of energy expenditure between treadmill running and water running. MA in Physical Education, 1986.

The purpose of this study was to determine and compare (using physically fit Ss) HR, VO2, and RPE responses over varying intensities both in the pool and on a treadmill. 10 Ss, ranging in age from 16 to 28 yrs participated. Testing procedures consisted of a max graded exercise test on a treadmill. Ss walked on the treadmill at 3-5 mph at 0 elevation for 4 min then, after a 1 min rest, resumed at 6 mph for 4 min. Thereafter, elevation increased by 2% every 2 min until volitional fatigue. Ss also were tested, using a similar protocol, in the water wearing a wet vest. Ss were tethered to the end of the pool and began simulated running while floating in a vertical position. A metronome was used to set work level. The first 2 stages were 4 min, beginning with 92 steps per min and 108 steps per min. Thereafter, cadence increased 6 steps per min every 2 min until S terminated the test. HR, VO2, and RPE were recorded continuously in both methods of testing. The regression equations were calculated for HR/VO2, HR/RPE, and VO2/RPE. T-tests were also calculated to determine whether or not slopes of the regressions were sig diff. During the treadmill tests, ave VO2max was 58 ml.kg-1; min-1 and ave max HR was 197 bpm. Ss were unable to reach the same level of exertion in the water. The peak VO2 was 48 ml.kg-1.min-1 which was about 83% of treadmill VO2max. Peak HRs ave 22 bpm lower using the Wet Vest (patent pending) than treadmill. The HR/VO2 relationship during the first work levels had lower HRs for equivalent VO2 during treadmill running but rapidly reversed itself as work load increased. The rate of increase of the slope for predicting VO2 from treadmill HG (slope = 1.97) was sig diff ($p < .05$) from the Wet Vest slope. The relationship of HR/RPE showed that for any value of RPE, HR was higher on the treadmill than observed in the water. Also, the slope of the regression for HR/RPE describing treadmill exercise was sig higher ($p < .05$) than Wet Vest. When observing VO2/RPE, a lower RPE was seen for an equivalent VO2 at the onset of treadmill exercise but reversed itself as work intensity increased. The diff in slope were sig (p < .05). Results indicate that water running would be suitable for supplementary training for athletes or as an alternate for aerobic conditioning for the nonathlete.

152. PEARMAN, P.L. Comparison of hydrostatic weighing and bioelectric impedance measurements in determining body composition pre- and post-dehydration. MA in Physical Education, 1987.

This study investigated the effect of dehydration on meas of body comp by hydrostatic weighing (HW) and bioelectric impedance anal (BIA). 10 endurance-trained M athletes between the ages of 18-42 yrs performed an endurance training session consisting of running until bw was reduced by approximately 3%. Body comp was determined prior to exercise and immediately after exercise by HW and BIA techniques. A high r existed between pre- and post-dehydration for both HW and BIA. Validity coefficients between HW and BIA were moderate (pre-dehydration .85 and post-dehydration .82). In addition, BIA %bf was 3.5% higher than HW %bf. The BIA revealed a mean loss of 3.72 lbs of bf and 1.22 lbs of lean bw after app 45 min of exercise. BIA also showed an increase in percent body water (mean = 2.59%) in all 10 Ss after dehydration. There are indications that BIA, with its present equational configuration, is meas something other than lean bw.

153. SCHNITZLER, A.B. Submaximal exercise performance and resting metabolism of Moslems during Ramadan. MSc in Physical Education, 1988.

The purpose of this study was to examine the changes that occur in resting metabolism and submax exercise performance during Ramadan. 8 Ss (7 M and 1 F) volunteered for the research study. On separate days, Ss were tested in the morning and afternoon prior to Ramadan, the first wk of Ramadan, and the fourth wk of Ramadan. During the testing sessions resting values of VO2, HR, and respiratory quotient (RQ) were meas. The Ss then walked for 5 min at 2.5 mph at a 4% grade with VO2, HR, RQ, and RPE meas. During Ramadan the resting VO2 L/min was sig lower in the afternoon, while the VO2 mL/kg/min did not change sig. The mean resting HR decreased sig from 85.2 bpm to 76.9 bpm. Respiratory quotient did not change. Ss lost a sig amt of wt (-1.92 kg) and a sig amt of fat (-2.82%) but fat-free mass did not change. The exercise HR, RQ, and RPE did not change sig during Ramadan and was not diff between morning and afternoon. Exercise VO2 in l/min decreased over the month, but VO2 mL/kg/min did not decrease. This data suggests that during Ramadan the body's metabolism slows down during the day in order to conserve its energy stores; however, exercise economy does not appear to be adversely affected.

154. SHULEVA, K.M. Exercise oxygen uptake in 3- through 6-year-old children. MA in Physical Education, 1989.

The purpose of this study was to compare submax VO2 and VO2max in children ages 3-4 and 5-6 yrs. Methods appropriate for this age gp were developed to elicit max performances on the exercise tests. Ss (N = 22) performed progressive treadmill walking tests. The criteria used to determine whether VO2max was reached were a plateauing of VO2, HR 195 and an R 1.00. The VO2max for the 3- and 4-yr-olds (44.5 ml.kg-1.min-1) was not sig diff from the 5- and 6-yr-olds (44.1 ml.kg-1.mi-1). At submax levels 5- and 6-yr-olds had sig lower relative VO2 indicating better economy in walking. A large proportion of children met testing criteria for VO2max. Test retest results indicated the tests were reliable.

155. SWEILEH, N.A. The effects of Ramadan fasting on maximum oxygen uptake and maximum performance. MA in Physical Education, 1988.

The purpose of this study was to test max aerobic capacity and max performance during Ramadan. 6 volunteer Ss participated in the exp. Venous blood samples were drawn, 3-day dietary records were obtained, and body comp was meas before Ramadan and during both the first and last wk of Ramadan. Venous blood samples were anal for sodium, chloride, and protein. Treadmill meas of VO2max, ventilation, and respiration rate were recorded during the mornings and afternoons pre-Ramadan, during the first wk of Ramadan, and during the last wk of Ramadan. First wk Ramadan tests showed a decrease in VO2max with a return to the pre- fasting levels in the last wk. Ventilation and HR did not change, but respiration rate sig decreased in the afternoon tests. Sodium, chloride, and protein increased during the first wk and returned to the pre-fasting levels during the last wk of Ramadan. BW sig decreased throughout the exp. While %bf decreased during the last wk, lean wt did not change. This study indicates a state of dehydration occurred during the first wk of Ramadan which was responsible for the decrease in bw and may have contributed to the decrease in VO2max. Rehydration took place by the last wk of fasting with VO2max returning to pre-Ramadan levels.

156. THOMAS, B. Assessment of quality of life in cardiac rehabilitation exercise participants. MA in Physical Education, 1987.

It was the purpose of this study to determine if an exercise rehab prog could improve the quality of life in cardiac patients. Six to 14 wks following a cardiac event patients volunteered for this study. 31 entered a cardiac rehab prog (exp gp) and 30 patients served as controls. Each gp was tested on a battery of psychological and physiological tests on entering the study. Both gps were retested on the psychological battery after 6-8 wks. Only the exp gp was tested on the physiological battery at 6-8 wks. The psychological assessments included the Flanagan Quality of Life Scales, the Spielberger State-Trait Anxiety Scales, the Zung Depression Scale, and the Body-Cathexis Scale. The physiological assessments included the graded exercise treadmill test according to the Bruce protocol, resting HR, resting BP, total chol, and triglyceride. The exp gp initially scored sig higher on all psychological variables at p = .05. When the more conservative Bonferroni p = .008 is used, state anxiety, trait anxiety, quality of life 1, and depression were sig. The exp gp initially had sig lower chol, triglyceride, SBP, and a higher MET level at p = .05. Triglyceride was sig at the more conservative Bonferroni p = .007. The initial sig diff on a no. of variables between the 2 gps strongly suggested a pre-selection factor. Cardiac rehab participants exp sig improvements in levels of total chol, triglyceride, DBP, and maximum METS, using a Bonferroni p = .007. A sig drop in SBP was also seen at p = .05. Improvements on several physiological factors were associated with the cardiac rehab prog. The exp gp demonstrated small sig improvements on quality of life 1, quality of life 2, and body-cathexis at p = .05 but not at p = .008. The present evidence indicates the cardiac rehab patients were initially a healthier gp psychologically and physiologically. Diff on the pre-test and lack of control gp physiological post-tests make interpretation of the pre- to post-test diff impossible.

157. WEBB, A.C. Prediction of maximum oxygen consumption from Bruce treadmill test in cardiac patients. MA in Physical Education, 1990.

The purpose of this study was to examine the Bruce equation for cardiacs and 2 Bruce equations for normal M used in estimating VO2max in M cardiacs. Those predicted values were compared to actual VO2max values obtained. 85 cardiac patients, ranging in age from 30 to 67 yrs, participated in this study. Actual VO2max values were obtained while Ss were tested on a treadmill using the Bruce protocol. Repeated meas ANOVA were performed using data from 50 Ss. There were statistically sig diff found between the 2 equations developed for normal M and actual values but, although sig was approached, no statistical diff was found between the cardiac equation and actual values. However, the diff of 7.6ml.kg-1.min-1 in the means of VO2max values was considered practically sig. The Bruce cardiac equation was tested on a second sample of 35 Ss. A sig 8.5ml.kg-1.min-1 diff between actual and predicted VO2max was found. A regression equation was derived using time as the only variable. This equation (Webb equation) was then validated using the second sample of 35 Ss. No diff between the predicted and actual VO2max values was found. The Webb equation also exhibited a low SEE (1.98ml.kg-1.min-1) compared with either of the other equations which had SEE as low as 3.11 and as high as 5.77ml.kg-1.min-1. It is felt that the Bruce equations consistently overestimate VO2max. This overestimation could possibly be dangerous for individuals with CV disease.

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158. HOLMES, J.F. The effects of lifting posture and muscular fatigue on erector spinae activation in normals and weight lifters. MA in Physical Education, 1990.

159. SLOCUM, N.E. An exploration of female intercollegiate field hockey players' epistemological and moral development in daily life and sport specific contexts. MA in Physical Education, 1990. (B.J. Light-Bredemeier)

160. WARREN, J.M. An analysis of change in a nonprofit health and fitness organization: Micro and macro perspectives. MA in Physical)education, 1990 (R. Park)

161. ZINKER, B.A. Mild iron deficiency and hormonal alterations during rest and exhaustive exercise. PhD in Physical Education, 1990 (G.A. Brooks)

Dietary induced iron deficiency is a means by which physiology and metabolism can be altered so that a better understanding of control and regulation processes and mechanisms may be investigated. Recent investigations demonstrated a decrease in gluconeogenic capacity in hepatocytes isolated from iron deficient rats *in vitro*. However, earlier work utilizing radioactively labelled glucose and lactate clearly showed an increase in glucose output by iron deficient rats beyond controls *in vivo*. Therefore, the purpose of the present investigation was to better understand glucoregulatory processes induced by dietary iron deficiency. For this purpose rats were studied at rest and during treadmill exercise to exhaustion. Female Sprague-Dawley weanling rats were randomly placed on a diet either mildly iron deficient (15 mg Fe/kg diet; Fe^-), or iron sufficient (50 mg Fe/kg diet; Fe^+). Diets were equal in all aspects except iron content. The animals were maintained on their respective diets and acclimatized to treadmill exercise (5 min, 13.4 m/min, 0% grade, 2 d/wk) for ~3.5-4 wk. Hemoglobin (Hb) level was meas weekly and reached 9.0±0.2 vs. 13.1 ± 0.3 gm/dl, (Fe^- vs. Fe^+, respectively), after 3.5 wks. The bw was sig decreased by Fe^- (144.6 ± 1.7 vs. 154.7 ± 2.2 gm, Fe^- vs Fe^+, respectively.) VO_{2max} was sig decreased (22%) by Fe^- (11.9 ± 0.4 vs. 15.3 ± 0.4 ml/min). Rats were then chronically implanted with arterial and venous indwelling catheters and allowed to recover for 3 days prior to a second, post-surgery VO_{2max} test to ascertain the effects of the surgical procedure. No diff in VO_{2max} was obtained pre- vs. post-surgery in absolute terms but when expressed relative to bw there was a sig decrease within each iron condition (13.3% and 15.0%, Fe^- and Fe^+, respectively). The respiratory exchange ratio (RER) was unaffected at rest but was sig increased at VO_{2max}, with Fe^-. The diff in RER at

VO_{2max} with Fe^- was eliminated when meas after surgery, but the pre-surgery to post-surgery RERs were not diff within gps at rest or VO_{2max}. The day of the exp (the 4th day of recovery), both gps of animals had regained their pre-surgery bw and there was no sig diff between gps in bw (168.3 ± 2.2 vs. 171.1 ± 3.2 gm, Fe^- vs. Fe^+, respectively). All resting animals reached their nadir concentrations of blood lactate and glucose, and plasma epinephrine (E) and norepinephrine (NE) between 15 min and 30 min. Additionally, there was no diff in resting levels of any of the blood parameters meas at these times between gps. Plasma ACTH, corticosterone, insulin, and glucagon after 45 min of rest were unaffected by Fe^- Resting liver, gastrocnemius, superficial and deep vastus medialis glycogen levels were also unaffected by Fe^-. However, resting soleus glycogen concentration was reduced by 25% by Fe^-. Tissue succinate oxidase activity was unaffected by Fe^- in the liver and kidney but sig decreased in the heart (37%), gastrocnemius (45%), and the superficial (50%) and deep vastus (48%) medialis after 45 min of rest. Phosphoenolpyruvate carboxykinase (PEPCK) activity was not altered in the kidney or liver after 45 min of rest by Fe^-. Additionally, PEPCK activity in skeletal muscle tissue (gastrocnemius, soleus, and deep and superficial vastus medialis) was not observed under the present conditions of this study. Time to exhaustion was sig decreased by Fe^- 45% (63 ± 5 vs. 116 ± 10 min, Fe^- vs. Fe^+, respectively). Yet, mild iron deficiency enabled exercise of just over an hour allowing for serial blood sampling during the workout. During exercise to exhaustion euglycemia was maintained under both dietary conditions. However, blood lactate was sig elevated throughout exercise by Fe^-. Plasma E and NE were both sig elevated by Fe^- during exercise as determined from calculation of the areas under each curve. With the exception of a decrease in plasma corticosterone (8%), no diff were found at exhaustion in plasma levels of E, NE, ACTH, insulin, or glucagon with Fe^-. However, from resting plasma levels to exhaustion levels, within trials, there was a sig increase in all hormones meas. Tissue liver and gastrocnemius glycogen concentrations at exhaustion were sig increased but tissue soleus and superficial and deep vastus medialis were unaffected by Fe^-. However, glycogen utilization rate was increased in the liver (39%), soleus (100%), and superficial vastus medialis (100%) by Fe^-. Tissue liver and kidney PEPCK activities were sig increased within trials from rest to exhaustion, although no diff between trials was observed for either tissue. In summary, no blood substrates or plasma hormones were affected by mild Fe^- during 45 min of rest. However, RER at VO_{2max} was sig increased by Fe^-. And, succinate oxidase activity was decreased in the heart and all skeletal muscles sampled at rest. Yet, the liver and kidney were spared of any change in succinate oxidase activity. It thus appears that the muscle tissue is sacrificed at the expense of the liver and kidney. During exercise blood glucose is maintained but lactate is sig elevated by mild Fe^-, indicating increased glycolysis. In support of this, tissue liver, soleus and superficial vastus medialis glycogen utilization rates were increased by Fe^- while plasma E and NE were increased during exercise by Fe^-. And, though there was no change with mild Fe$^-$, PEPCK activity increased from rest to exercise in both iron conditions. In conclusion, mild iron deficiency results in an augmented sympathetic response. Increased epinephrine levels are associated with enhanced gluconeogenic precursor (lactate) supply during treadmill exercise to exhaustion by iron deficiency. Differences in gluconeogenesis previously observed between *in vitro* and *in vivo* are explained.

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162. DEFILIPPO, G.J. Effect of training frequency on cervicalrotation strength. MSc in Exercise and Sport Sciences, 1991. (J.E. Graves)

There is a lack of data on the effect of resistance training on the isolated cervical (CERV) rotation (ROT) muscles. No data are available on CERV ROT training frequency. 60 M (age=28±10 yrs) and 32 F (age=30±11yrs) with no history of CERV pain were given an isometric (IM) strength test at 7 angles through a 144° ROM, both to the right and to the left with a CERV ROT machine (MedX^{tm}, Ocala, Fl) before (T1) and after 12 wks (T2) and 20 wks (T3) of training. Ss were stratified according to peak strength at T1 and randomly assigned to a nonexercising control (CONT) gp (n=12) or gps that trained 1X/2WKs (n=20), 1X/WK (n=21), 2X/WK (n=21), or 3X/WK (n=18). Training consisted of one set of 8-12 rep of full ROM variable resistance CERV ROT exercise to volitional fatigue. There was no diff between sides for IM strength ($p>0.05$); therefore, the data were pooled for anal of training. Relative gains in IM strength at 12 wks ranged from 22.2% to 73.3% at the fully stretched position and from 21% to 78.7% at the fully rotated position. At 20 wks, the relative gains ranged from 20.4% to 71.5% and 13.5% to 122.9% at the fully stretched and rotated positions, respectively. At T2, ANCOVA revealed that 3X/WK IM strength was greater ($p \leq 0.05$) than 2X/WK at 4 angles and all other gps at all angles. IM strength of the 2X/WK gp was greater ($p \leq 0.05$) than 1X/WK at 2 angles and 1X/2WKs and CONT at all angles. Training 1X/WK showed greater (p 0.05) IM strength than 1X/2WKs and CONT at only 3 angles, while the 1X/2WKs and CONT gps did not differ at any angle. At T3, an ANCOVA revealed that 3X/WK IM strength was greater ($p \leq 0.05$) than 2X/WK at only 2 angles, 1X/WK at 6 angles, and 1X/2WKs and CONT at all angles. Training 2X/WK produced greater IM strength ($p \leq 0.05$) than 1X/WK at only 1 angle, 1X/2WKs at all angles, and CONT at 6 angles. IM strength of the 1X/WK gp was greater ($p \leq 0.05$) than 1X/2WKs at 3 angles and CONT at 4 angles. At 20 wks, subject attrition in the 3X/WK gp (61.1%) was higher than for the other gps (16.7% to 35.0%). The CERV ROT muscles are highly trainable and respond well to variable resistance training. These muscles exhibit a dose response to training frequency from 1X/WK to 3X/WK. The 3X/WK gp was the most effective in improving CERV ROT strength,, and 1X/2WKs had no effect compared to the

CONT. However, due to the high attrition associated with training 3X/WK, 2X/WK is recommended for most individuals.

163. GARZARELLA, L. Predicting body composition of healthy females by B-mode ultrasound: Comparison with anthropometry and bioelectrical impedance. MSc in Exercise and Sport Science, 1991. (J.E. Graves)

The purpose of this study was twofold: (1) to develop and cross-validate regression equations for predicting body density (BD) and fat free mass (FFM) of women by B-mode ultrasound (ULTRA), and (2) to compare the ULTRA technique to anthropometry (ANTHRO) and bioelectrical impedance anal (BIA) in terms of predictive accuracy. 254 caucasian women (age = 18 to 74 yrs, M = 37.8 ± 16.2 yrs; ht = 149 to 186 cm, M = 166.0 ± 6.5 cm; wt = 42 to 126 kg, M = 62.9 ± 11.5 kg; %fat = 9.2 to 52.8%, mean = 28.3 ± 9.3%) were hydrostatically weighed for BD. Subcutaneous fat was meas with a Lange caliper at the following 10 sites: chest, axilla, triceps, subscapula, abdomen, suprailium, anterior thigh, suprapatella, medial calf, and biceps. Fat and muscle thicknesses were ultrasonically meas with an Aloka echo camera at 13 sites (the same 10 listed previously plus anterior forearm, posterior thigh, and posterior calf). Because of difficulty in distinguishing the fat-muscle interfaces at the suprailium, axilla, chest, and medial calf, muscle thicknesses were not determined at these 4 sites. The Valhalla bioelectrical impedance analyzer was used to determine total body resistance. Prediction equations for BD and FFM were developed from the data of 200 women and cross-validated on a randomly selected subsample of 54. The following equations were obtained: BD(ULTRA) = $1.08812 - 0.0008478(\Sigma 4) + 0.0000021(\Sigma 4)^2 - 0.0003109$ (Age) where $\Sigma 4$ = anterior thigh, abdomen, biceps, and triceps, R^2=.86, SEE=0.007 g/ml (3.4% fat); BD (ANTHRO) = $1.10537 - 0.00035146\ (\Sigma 7) + 0.00000046(\ 7)^2 - 0.00037016$(Age) - 0.00023087 (ABG) where $\Sigma 7$ = chest, axilla, triceps, subscapula, abdomen, suprailium, and anterior thigh, ABG = abdomen girth, R^2 = .85, SEE = 0.008 g/ml (3.5% fat); FFM (ULTRA) = $-44.41658153 + 0.14275697(\Sigma 5) - 0.06425769$ (Age) + 0.37284263 (Ht) + 0.18147095 (Wt) where $\Sigma 5$ = anterior forearm, anterior thigh, abdomen, biceps, and triceps R^2 = .85, SEE = 2.4 kg (3.6% fat); and FFM (BIA) = 12.90970529 + 0.56474721 (RI) + 0.16204437 (Wt) - 0.14433792 (Age) where RI = resistive index [height(cm)^2/resistance (ohms)], R^2 = .86, SEE = 2.2 kg (3.4% fat). Cross-validation statistics were: (Mean D = predicted - criterion).

	MEAN Δ	r	SEE	E
ULTRA(BD)(g/ml)	0.001(-0.4%)	0.91	0.009(4.1)	.009(4.2%
ANTHRO(BD)(g/ml)	0.001(-0.3%)	0.92	0.008(3.8%)	.009(3.9%)
ULTRA(FFM)(kg)	0.2(-0.3%)	0.91	2.6(4.3%)	2.7(4.3%)
BIA(FFM)(kg)	0.6(-1.0%)	0.92	2.5(4.0%)	2.5(4.1%)

These data show that the ULTRA technique is valid for estimating BD and FFM of women of various ages, and the predictive accuracy of the ULTRA technique is comparable to the ANTHRO and BIA methods.

164. LIDOR, R. Learning strategies and achieving skilled performance.
PhD in Health and Human Performance, 1991, 220 pp. (R. N. Singer)

Investigated was the influence of 3 learning strategies: (1) an awareness strategy, (2) a nonawareness strategy, (3) Singer's Five-Step Approach, and (4) a control condition (no strategy) on the acquisition of skill in ball-throwing and key-pressing tasks. In Exp 1, 72 Ss were randomly assigned to the 4 conditions. They completed 250 trials with a ball-throwing task, and 50 trials in a dual-task performance situation (the throwing task and a verbal task) over 2 days. In Exp 2, 64 Ss were randomly assigned to the same conditions. They performed 250 trials with a key-pressing task and 50 trials of dual-task performance over one day. ANOVAs revealed similar results for both exp. The 3 learning strategy gps performed better than the no-strategy gp in the acquisition phase as well as in the dual-task situation. Among the learning strategy gps, the Five-Step Approach and the nonawareness Ss achieved better than Ss in the awareness gp.

165. SOCHA, M.L. Comparison of total peripheral resistance and Doppler ultrasound blood velocity waveforms during rest, exercise and recovery.
MSc in Exercise and Sport Science, 1991. (D.L. Spitler)

To investigate the efficacy of Doppler ultrasound blood velocity waveforms to predict Total Peripheral Resistance (TPR) during rest, exercise, and recovery, 25 firefighters from the FL Division of Forestry were tested. The Ss had the following characteristics M(SD): age, M=35 ± 9; %bf, M=21.6 ± 8.1; Max VO_2, M=43.1 ml kg^{-1} min^{-1} ± 9.8. Each S performed a treadmill test for MVO_2 and a 20 min submax cycle ergometer test at 60% VO_{2max}. Each test consisted of a 10 min seated rest followed by cycling and a 10 min seated recovery period. Doppler ultrasound blood velocity waveforms (Parks Flo-Lab) were recorded at the radial artery 3 times during the rest period, twice during steady state exercise, and 5 times during recovery. Doppler ultrasound waveforms delineated included systolic forward flow (SFF), reverse flow (RF), diastolic forward flow (DFF), and systolic/diastolic ratio (SD ratio). BP and cardiac output (impedance cardiography) were recorded for total peripheral resistance. General linear model ANOVAs (alpha = 0.05) were used to test sig diff. Regression equations were performed to predict TPR from waveforms and waveforms from TPR. Relationships tested by correlation. Resting SFF (22.78 cm sec^{-1}), RF (1.73 cm sec^{-1}) and SD ratio (12.21) sig increased during exercise while during the same period resting DFF (5.76 cm sec^{-1}) and TPR (2167 dyne cm^5 sec^{-1}) sig decreased. 2 sig equations were produced: (1) resting TPR can be predicted from SD ratio and (2) recovery TPR with SD ratio and SFF. Relationships between TPR and DFF and SD ratio were found at rest ($r = -0.45$ and $+0.64$, respectively), while the max value of R^2 obtained was only 0.40. In summary, prediction of TPR cannot be achieved at rest or during recovery min one using SD ratio and SFF since only 40% of the variance is accounted for in the equation. These findings indicated a need to incorporate other factors such as age, bf comp, fitness level, and level of obesity into the equation in order to increase the reliability of the equation.

UNIVERSITY OF GEORGIA (M.L. PERKINS)
ATHENS, GEORGIA

166. AENCHBACHER, L.E. III. *The relationship between physical activity and self-rated depression in free-living women aged 60 years and older*. EdD in Physical Education, 1990. (R.K. Dishman)

The relationship between physical activity and depression was studied in elderly free-living women ($\underline{M} = 69.9 \pm 5.9$ yr). The concurrent validity of physical activity questions and depression meas (Blue-Cheer Index and Center for Epidemiological Studies Depression Scale [CES-D]) used in the NHANES I and NSPHPC I surveys of the U.S. population was examined and compared with clinically validated meas of physical activity (Caltrac activity monitor and the 7-day Recall) and depression (Geriatric Depression Scale [GDS] & Life Satisfaction Scale). Volunteer Ss were participants (N = 95) from a two-day rec day camp at Fort Yargo in Winder, GA. Results indicated that the NHANES I and NSPHPC I physical activity meas were related to GDS and Life Satisfaction. A sig canonical correlation coefficient ($R = .35$, $\underline{R}^2 = .12$) was obtained (Wilk's Lambda = .87, $\underline{df}$ 4, $\underline{F} = 2.14$, $\underline{p} < .05$). Redundacy anal indicated 7% to 9% common variance between the physical activity and depression sets. Principal components anal of the physical activity set followed by multiple linear correlation anal with the depression meas supported that the population-based activity questions sere related to the GDS ($B = -.37$, $\underline{t} = -3.32$, $\underline{p} < .01$, $R^2 = .10$) independently of the other activity and depression meas. It is concluded that elderly free-living women who report little or no physical activity also report more symptoms of depression. The use of the GDs, clinically validated for the elderly, yielded a stronger relationship with physical activity than did the population-based CES-D meas of depression. Caltrac and Seven-day Recall did not contribute to the depression or physical activity sets. However, relationships between Caltrac and the physical activity questions from NHANES I, NSPHPC I, and a two-day recall of camp activity support the concurrent validity of the population-based meas of physical activity for elderly women.

167. BETHKE, T. Effects of relationship status, setting, and sex of perpetrator on college student evaluations of dating violence. MA in Health Promotion and Behavior, 1990. (D.M. DeJoy)

Courtship has long been known as a period of vulnerability to sexual exploitation (Kanin, 1957; Kirkpatrick & Kanin, 1959) but it was not until the early 1980s that physical violence during courtship was systematically investigated. Makepeace's (1981) landmark finding that one-fifth of coll students had exp dating violence and 70% "knew someone" who had exp dating violence was a surprise to researchers who had long theorized that it was the demands of marriage and family that provoked relationship violence (Gelles, 1972). Since Makepeace's original work, there have been a number of other studies on dating violence, and while prevalence estimates vary considerably from study to study, physical violence appears to be an alarmingly common aspect of dating behavior. The present study was concerned with examining the relative acceptability and culpability of dating violence. An attribution theory paradigm was used to examine 3 variables which have been hypothesized to influence how people perceive dating violence: relationship status, setting, and gender of perpetrator. 148 coll students were presented with written descriptions of dating violence that represented the factorial combinations of the 3 variables identified above. The basic design was a 2 x 2 x 2 between-subjects design; each participant read a single vignette that reflected one of the possible 8 combinations of the 3 independent variables. The vignettes were all based on the same episode of dating violence, with minor variations introduced to allow manipulation of relationship status, setting, and gender of perpetrator. Participants answered a series of questions (rating scales) about the vignette, provided general demographic and dating history information, and completed the Conflict Tactics Scale (Straus, 1979). This Conflict Tactics Scale (CTS) was used to assess previous exp with dating violence (both perpetration and victimization). Participants were dichotomized as violent or nonviolent using the violence subscale of the CTS. Participants reporting one or more acts on the subscale were classified as violent. Using this scheme, perpetration and victimization were both more common among F (42.85% and 40.25%, respectively) than males (27.69% and 30.77%, respectively). These data are consistent with those reported by other investigators. However, using these and other scores from the CTS as covariates, history of dating violence had a negligible impact on responses to the scenarios. Anal of the rating scales indicated that relationship status and gender of perpetrator had strong effects on evaluations of dating violence. Violence (pushing and slapping) was judged to be sig more acceptable in serious than casual relationships. Less responsibility was also attributed to the M perpetrator when the relationship was serious. For F perpetrators, similar attributions were made across categories. Relationship status also influenced the perceived appropriateness of various actions that might be taken in response to the violence. In general, actions related to "saving" the relationship were considered more appropriate in a serious relationship. M perpetrators were consistently perceived more negatively than F perpetrators. Pushing and slapping was rated as less acceptable for M than F, and M were judged to have caused greater physical and emotional injury. The violent acts were also perceived as more criminal when perpetrated by a M. M victims were also viewed as needing less recourse than F victims. Telling a friend, relative, or the authorities was sig less appropriate for M than F victims. Ending the relationship and responding with physical aggression were also judged as less appropriate for M victims. Viewed together, these results suggest that our condemnation of courtship violence is not absolute or universal. While the coll students in this study certinly did not approve of violent tactics, violent behavior was considered more acceptable and less culpable in a serious or "committed" relationship. The seriousness of the behavior also varied with the gender of the perpetrator. While these results may simply reaffirm the dictum that "boys should never hit girls," they do suggest that dating violence is viewed much more benignly when carried out by a F. Violent behavior was judged to be less unacceptable, less injurious, and less criminal when carried out by a F. M victims were also judged to need less assistance in dealing with their victimization. These gender diff are interesting, especially in view of data from this and other studies which show that F use violent tactics as often as do M. Dating vignettes would appear to be a useful tool for helping students to "discover" their biases and for teaching conflict management skills.

168. BLACK, D.M. Validation of FITNESSGRAM and AAHPERD one-mile run/walk criterion-referenced standards for youth 13 to 17 years of age. MA in Physical Education, 1990. (K.J. Cureton)

The purpose of this study was twofold: (1) to partially validate the one-mile run/walk criterion-referenced standards of FITNESSGRAM and AAHPERD, and (2) to determine to what extent variance in mile run/walk performance is accounted for by variance in running economy, percent VO_{2max} utilized during the mile run/walk, and VO_{2max}. The following metabolic data were collected on 29 boys and 25 girls 13 to 17 yrs of age: VO_{2max} (ml/kg x min) at 8.1 and 9.6 km/hr, percent VO_{2max} utilized during the mile run/walk, and mile run/walk time. The data suggest that both the FITNESSGRAM and AAHPERD CRS accurately classify VO_{2max} for youth 13 to 17 yrs of age. VO_{2max} was most highly correlated with mile run/walk performance, followed by percent VO_{2max} utilized, and running economy. The 3 metabolic variables accounted for 84% of the variance in mile run/walk performance.

169. BLACKWELL, E.B. JR. An inventory for assessment of attitudes of high school students toward health-related fitness. PhD in Physical Education, 1990. (A.E. Jewett)

The purposes of this study were to develop an assessment instrument for meas of HS students' attitudes toward health-related fitness; and to determine whether students who have participated in a mandated fitness course have more pos attitudes toward health-related fitness than students who have not participated in such a course. Content validity was accomplished by having experts review the statements that were written to express attitudes toward each of the components of health-related fitness. The results of the expert review were used to dev an initial attitude inventory. A pilot study was conducted by admin the attitude inventory to 56 M and F HS students. The final Attitude Toward Fitness (ATF) inventory, based on the results of the pilot study anal, was admin to 506 HS students in June 1990. A Kruskal-Wallis one-way ANOVA was used to determine whether students who had completed the mandated fitness course had sig higher scores on the ATF inventory than those students who had not taken the course. The anal demonstrated that students who had taken the mandated fitness course scored sig higher. A Kendall tau r was utilized to determine whether students with pos attitudes toward general health-related fitness would also have pos attitudes toward each of the subdomains of health-related fitness. A Kruskal-Wallis one-way ANOVA was used to determine whether there was a sig diff in attitude scores based on gender. The anal revealed that there were no sig diff based on gender. It was concluded that participation in mandated fitness courses appeared to improve student attitudes toward health-related fitness in general and toward each of the components of health-related fitness and that students who have pos attitudes toward general health-related fitness are likely to have pos attitudes toward each of the components of health-related fitness. Additionally, it was shown that attitudes toward health-related fitness do not seem to be related to gender.

170. CONLEY, D.S. JR. Validation of the 12-minute swim as a field test of maximal aerobic power. EdD in Physical Education, 1989. (K.J. Cureton)

The purpose of the study was to validate the 12-min swim as a field test of max aerobic power ($\mathrm{VO_2peak}$). Other objectives were to compare the validity of the 12-min swim and run as field tests of $\mathrm{VO_2peak}$ and $\mathrm{VO_2max}$ and to determine the relative importance of $\mathrm{VO_2peak}$, swimming economy ($\mathrm{VO_2}$ meas at 0.65 m.sec-1), and % $\mathrm{VO_2peak}$ used at the ave 12-min swim velocity in accounting for individual diff in 12-min swim performance. 36 M rec swimmers completed 12-min swim and run tests, tethered swimming $\mathrm{VO_2peak}$ and uphill treadmill running $\mathrm{VO_2max}$ tests, and assessments of swimming economy and % $\mathrm{VO_2peak}$ used at the ave 12-min swim velocity within a 3 wk period. R and SEE from predictions of tethered swimming VO_{2peak} from the 12-min swim (.40 and 5.7 ml.kg BW^{1}.min^{-1}), treadmill running VO_{2max} from the 12-min run swim (.38 and 5.1 ml.kg.BW^{-1}.min^{-1}), treadmill running VO_{2max} from the 12 min (.88 and 2.6 ml.kg BW^{-1}.min^{-1}) and tethered swimming VO_{2peak} from the 12-min run (.74 and 4.2 ml.kg BW^{-1}.min^{-1}) indicated that the 12-min run was a more valid predictor of max aerobic power than the 12-min swim, regardless of whether VO_{2peak} was meas during running or swimming. The primary reason the 12-min swim was a poor predictor of VO_{2peak} was that 12-min swim performance was influenced by variation in swimming economy ($r = -.65$). The linear combination of VO_{2peak} and swimming economy accounted for 69% of the variance in 12-min swim performance, compared to the 16% accounted for by VO_{2peak} alone. Estimates of the ave variance in 12-min swim performance accounted for by swimming economy (52%), VO_1 (26%), and % VO_{2peak} utilized during the swim (6%) with combinations of the other independent variables held constant indicated that swimming economy was the most important metabolic determinant of 12-min swim performance, followed by VO_{2peak} and the % VO_{2peak} utilized. It was concluded that unlike the 12-min run, the 12-min swim does not have acceptable validity as a field test of max aerobic power in young M rec swimmers.

171. DELP, M.D. *Differential control of blood flow to muscles composed predominantly of different fiber types.* PhD in Physical Education, 1990. (R.B. Armstrong)

Previous work has shown that the influence of the sympathetic nervous system on muscle blood flow is more profound in fast white than slow red muscle (Folkow & Halicka, *Microvasc. Res.*, 1968; Gray, *Angiol.*, 1971). However, the influence of the sympathetic nervous system on fast red muscle and the range of control exerted by sympathetic adrenergic receptors on vascular resistance in skeletal muscle has not been systematically studied. Thus, the purpose of these exp was to examine (1) sympathetic neural vasoconstrictor tone, (2) the range of control of vascular resistance by alpha 1-, alpha 2-, and beta 2-adrenergic receptors, and (3) the vasodilatory potential of adrenergic receptors in muscles composed predominantly of diff fiber types in the absence of evoked muscular activity. The removal of sympathetic neural influences through denervation resulted in a 2.7-fold increase in blood flow to both soleus (slow red) and red gastrocnemius (fast red) muscles, but an 8.7-fold increase in flow to white gastrocnemius (fast white) muscle. The range of control of vascular resistance through pharmacological agonism and antagonism of alpha1- receptors was lowest in soleus muscle (2.5-fold change), intermediate in red gastrocnemius muscle (10.1-fold change), and greatest in white gastrocnemius muscle (24.9-fold change). However, the range of control exerted by both alpha2- and beta2- receptors was similar among the muscle types. These data indicate that (1) control of vascular resistance by the sympathetic nervous system in fast red muscle is most similar to that in slow red muscle, and (2) the sympathetic nervous system has the potential for total control of blood flow to fast white muscle.

172. DENGEL, D.R. Effects of dehydration on ratings of perceived exertion at the lactate and ventilatory thresholds. PhD in Physical Education, 1990. (K.J. Cureton)

Depletion of body water leads to a reduction in physical performance capacity. It has been hypothesized that alterations in anaerobic function, thermoregulation, or perception of effort may be responsible. Mean RPE at the lactate threshold (LT) and ventilatory threshold (VT) have been reported to be relatively constant. Whether or not RPE at LT and VT are altered by dehydration is not known. The primary purpose of this study was to investigate the effects of varying levels of dehydration on RPE at LT and VT. 9 M Ss completed 3 progressive cycling tests under 3 hydration conditions. Two days prior to each test Ss exercised in a warm (38 C degrees) environment for 1.5 hrs on both days. Food and fluid intake was controlled to achieve either a 0%, 3%, or 6% loss in bw. During each test, Ve, VO_2, RER, HR, and rectal temperature (Tr); plasma concentrations of hemoglobin (Hb), free-fatty acids (FFA), glucose (Glu) and glycerol (Gly); blood lactate concentration (La); and hematocrit (Hct) were meas. LT was determined by computer from plots of log lactate to log VO_2. VT was determined visually from plots of Ve/VO_2 and Ve/VCO_2. The sig of mean diff among dehydration conditions for responses at selected submax exercise intensities, and at the LT and VT was determined using a repeated meas ANOVA and post hoc tests. During submax exercise, at intensities between 40 and 80% of VO_2max, RPE, VO_2, RER, Ve, HR, La, FFA, Gly, Hct, and plasma volume change were not sig diff among treatments. Sig diff were observed in Hb between the 0%- and both 3%- and 6%- dehydration conditions. Dehydration of 6% caused a sig increase in Glu compared to the 3%- and 0%- dehydration conditions. A sig diff in Tr was observed between the 0%- and 6%- dehydration conditions. Dehydration did not sig alter LT or VT, or the cardiorespiratory, metabolic and perceptual responses at LT or VT. It was concluded that up to 6% dehydration does not alter RPE, LT, or VT, and the RPE at LT or VT.

173. DOWD, D.A. A factor analysis of selected beginning-level racquetball skill tests. EdD in Physical Education, 1990. (T.A. Baumgartner)

The purpose of the study was to investigate the factor structure of beginning-level racquetball skills in the domain of human motor performance to identify the robust factors in that domain. A battery of 10 exp variables was admin to 230 M and F univ beginning-level racquetball players. These variables were selected on the basis of their representation of a theoretical domain possessing the hypothesized dimensions of serve, kill shot, and passing/defense shots. The intercorrelations among the criterion scores of the 10 tests were calculated and the matrix was subjected to the factor anal models of principal components anal, alpha factor anal, and maximum-likelihood factor anal. The initial factor solutions were transformed by orthogonal and oblique solutions. Those factors identified by several factor anal models were interpreted as defining beginning-level racquetball playing ability. Results of the study showed that there was a diff in the factor structure for M and F. A sig amount of the variance was explained by 2 robust factors for M and 3 robust factors for F. The M data factor anal resulted in the emergence of a VOLLEY factor, represented by the long wall volley, and a DRIVE SERVE factor, represented by the short drive serve. The F data factor anal resulted in the emergence of a VOLLEY factor, represented by the long wall volley, a PLACEMENT factor, and a KILL SHOT factor, represented by the forehand kill shot set up with a toss and hit. Based on the findings and conclusions of this study, several recommendations were suggested. It was recommended that racquetball skill tests with higher reliability be developed to be used as variables in a similar study. Also, it was recommended that this study be replicated on intermediate and/or advanced level players. Finally, it was recommended that stricter guidelines be developed to differentiate between beginning level and experienced players. This might answer the question as to whether the diff in results for M and F in this study was gender-related or experience-related.

174. DUAN, C. Effects of Ca^{2+} and verapamil on muscle injury immediately after exercise. PhD in Physical Education, 1990. (R.B. Armstrong)

We have hypothesized Ca^{2+} overload is mechanistically involved in the early events in exercise-induced muscle injury. This study was designed to determine Ca^{2+} uptake in muscles during the first 2 hrs after prolonged exercise (down a 17 degree incline at 15m/min for 250 min), and the route of uptake. 80 rats were randomly placed in 10 gps: sedentary (S); sedentary with 2 hrs of Ca^{2+} (3 mM) incubation (SC); sedentary with 2 hrs of verapamil (0.75 mM) inclubation (SV); sedentary with 2 hrs of Ca^{2+} and verapamil incubation (SCV); immediate post-exercise (E); post-exercise with 2 hrs of Ca^{2+} incubation (EC); post-exercise with 2 hrs of verapamil incubation (EV); post-exercise with 2 hrs of Ca^{2+} and verapamil incubation (ECV); sedentary with 2 hrs of incubation in a Ca^{2+}-free medium (SCF); and post-exercise with 2 hrs of incubation in a Ca^{2+}-free medium (ECF). Total muscle [Ca^{2+}], mitochondrial [Ca^{2+}], stromal [Ca^{2+}], and supernatant [Ca^{2+}] in soleus muscles were used as indicators of Ca^{2+} overload, and injury was estimated from histochemical anal of muscle cross-sections. CK release in incubation medium and muscle twitch tension were used to determine the relationship between cell [Ca^{2+}] and the muscle injury resulted from exercise, Ca^{2+} or verapamil incubation. The data indicate the following: (a) Exercise increases total muscle [Ca^{2+}], mitochondrial [Ca^{2+}], and stromal [Ca^{2+}], decreases twitch tension, and produces muscle injury. (b) Three mM Ca^{2+} incubation increases total muscle [Ca^{2+}], mitochondrial [Ca^{2+}], and supernatant [Ca^{2+}], decreases twitch tension slightly, and produces muscle injury. (c) 0.75 mM verapamil had no sig effect on total muscle [Ca^{2+}], mitochondrial [Ca^{2+}], supernatant [Ca^{2+}], or muscle injury; however, 0.75 mM verapamil decreases twitch tension and changes the membrane permeability by increasing CK release. We conclude that the net influx of external Ca^{2+} resulting from exercise or during Ca^{2+} incubation is not primarily through slow Ca^{2+} channels, suggesting that external Ca^{2+} gains entry to the cells through ruptures in the cell membrane, and this event may play a central role in the etiology of exercise-induced muscle injury.

175. DUNN, A.L. Regional changes in brain noradrenergic activity following different types of exercise training in rats. PhD in Physical Education, 1990. (R.K. Dishman)

Changes in norepinephrine (NE), 3-methoxy-4-hydroxy-phenylglycol (MOPEG), and 3,4 dihydroxyphenylglycol (DOPEG) in frontal cortex (FC), hippocampus (H), pons-medulla (PM), and spinal cord (SC) were compared in M Sprague-Dawley rats (N=48) randomly assigned to 1 of 4 exp conditions: (AW) ran spontaneously in an activity wheel; (TW) ran a daily distance equivalent to AW on a motor driven treadmill; (TT) ran one hr/day at 25-30 m/min on the treadmill; (C) sedentary controls. No shock was used. Fitness indicated by succinate dehydrogenase (SDH) (mmoles/min/g) was assessed by spectrophotometry in soleus (SOL), red gastrocnemius (G_R), and white gastrocnemius (G_W). Open-field ambulation (total squares [TS]) was rated by 2 independent judges. NE, MOPEG, and DOPEG (nmoles/g) were assayed by high performance liquid chromatography with electrochemical detection (HPLC-EC). Gp diff were tested by one-way ANOVAs with Duncan's Multiple Range Test post hoc anal, $p<0.05$. Results indicated in FC: turnover (MOPEG/NE) was higher for TW (2.28 ± 0.33) compared to C (1.23 ± 0.24); MOPEG was higher for AW (2.715 ± 0.195) and TT (2.927 ± 0.293) compared to C (1.953 ± 0.126). In H: MOPEG was higher for TT (12.559 ± 1.428) compared to C (8.702 ± 0.496). In PM: DOPEG was higher for TW (22.094 ± 2.314) and TT (21.616 ± 1.917) compared to C (14.19 ± 2.16). In SC: turnover was lower for AW (1.62 ± 0.26) and TT (2.07 ± 0.20) compared to TW (3.75 ± 0.65); NE was higher for AW (1.359 ± 0.1768) and TT (1.298 ± 0.109) than C (0.815 ± 0.108) or TW (0.847 ± 0.090). SDH in SOL was higher in TT (4.61 ± 0.79) compared to C (3.78 ± 0.96). Open-field testing indicated a significant increase in TS only for AW (94.0 ± 39.2 to 128.7 ± 44.0). In general, all running conditions increased noradrenergic activity compared to C, although the most consistent changes occurred for TT. Anxiety responses diff across modes with AW showing increased TS compared to the other conditions. Changes in NE, MOPEG, DOPEG, and MOPEG/NE were specific to brain region and consistent with neurobiological models of an antidepressant effect of exercise.

176. FORBUS, W.R., III. The suitability and reliability of the Physical Best fitness test with selected special populations. EdD in Physical Education, 1990. (T.A. Baumgartner)

The purpose of this study was to determine the suitability and reliability of the Physical Best fitness test with mildly (MiMH) and moderately (MoMH) mentally handicapped, learning disabled (LD), and non-handicapped (NH) students. 200 Ss were selected for this study with equal numbers of M and F. Ss were tested and subjectively evaluated during the testing to indicate deviations in test procedures. Test-retest reliability coefficients were calculated. A 4 x 2 ANOVA design and Scheffe multiple comparisons were employed to determine if there were mean diff among gps. Sig diff ($p < .05$) were found among all gps on each item of the fitness test. Sig diff were found among gps on most two-gp comparisons. All of the reliability coefficients were acceptable (> .80); except, the pull-up test was unreliable (< .60) for F in the MoMH and MiMH gps. Reliability coefficients less than .80 were found for MoMH and MiMH F on the sit-and-reach test and the LD gp on the modified sit-up test. Utilizing the subjective performance checklist, more deviations were reported for the mentally handicapped gps than the LD or NH gps. A low number of deviations was reported for the LD gp on all items. The results of this study support the hypothesis that the items on the Physical Best test are reliable for each gp, but do not support the hypothesis that the items on the test are suitable for each gp and the hypothesis that there is no diff among gps in performance. Overall, the Physical Best test should not be used with mentally handicapped populations. Modifications and/or alternative tests should be considered when assessing health-related physical fitness of these populations.

177. RAY, C.A. Cardiovascular adaptations to supine and upright exercise training. PhD in Physical Education, 1989. (K.J. Cureton)

To determine the effect of posture on CV adaptations to training, 16 M Ss were trained using high-intensity interval and prolonged continuous cycling in either the supine or upright posture 4 d/wk for 8 wks while 7 M Ss served as nontraining controls. VO_{2peak} increased sig in both the supine training gp (STG) and upright training gp (UTG) during upright cycling (16.1% and 14.6%) and supine cycling (22.9% and 6.0%). The increase in VO_{2peak} in the STG was sig greater than the UTG. No sig CV adaptations were observed at rest in either training gp. During exercise at 100 watts, sig increases in end-diastolic volume, stroke volume, and cardiac output (radionuclide ventriculography), and decreases in HR and systemic vascular resistance following exercise training were specific to the exercise posture performed during training. During exercise at 200 watts, sig increases in end-diastolic volume and stroke volume occurred during supine exercise following exercise training in both training gps. HR was decreased sig in the STG during supine exercise, and during upright and supine exercise in the

UTG. Systemic vascular resistance was decreased during upright and supine exercise only in the STG. Sig attenuation of BP occurred in both training gps following exercise training during upright and supine exercise. However, BP was sig decreased during upright and supine exercixe at 200 Watts only in the STG. Indices of myocardial contractility, ejection fraction and SBP:ESV ratio did not change in the STG at either 100 or 200 watts. SBP:ESV ratio increased sig during upright exercise in the UTG at 200 watts. No sig metabolic or CV changes occurred in any of the variables in the control gp. The data suggest that (1) supine and upright exercise training elicit similar metabolic and CV adaptations in the posture used for training, (2) CV adaptations obtained from exercise training in one posture do not generalize to the other posture, and (3) increased stroke volume following supine and upright training results mainly from increased ventricular filling time and greater utilization of the Frank-Starling mechanism.

178. WARREN. G.L., III. The role of diffusion limitation in exercise-induced hypoxemia. PhD in Physical Education, 1989. (K.J. Cureton)

The mechanism(s) responsible for the exercise-induced hypoxemia observed in some highly-trained endurance athletes is (are) not known. It has been hypothesized that the main contributor is a diffusion limitation consequent to a very short transit time for the red blood cell as it passes through the pulmonary capillary bed. The objective of this study was to meas transit time at rest and during 5 exercise bouts of moderate-to-hard intensities to determine if the degree of hypoxemia observed is paralleled by a reduction in transit time. A secondary objective of this study was to estimate the extent that relative hypoventilation contributes to the dev of hypoxemia. Meas of cardial output (Q), pulmonary capillary blood volume (Vc), and transit time were made in 16 highly-trained athletes at rest and at work rates designed to elicit 55, 65, 75, 85, and 95% VO2peak. Cardiac output was meas using Doppler and two-dimensional echocardiography. Pulmonary capillary blood volume was determined from 2 meas of the lung's diffusing capacity for CO made at diff O_2 tensions. Transit time was calculated by dividing Vc by Q. Both mean (± SE) Q and Vc rose linearly with increasing VO_2 and at the highest work rate were 29.4 (± 0.7) 1/min and 215 (± 10.1) ml, respectively. Mean (± SE) transit time was 1.05 (±0.12) sec at rest and 0.42-0.46 (± 0.02-0.03) sec during exercise. Transit time did not fall with increasing exercise intensity. Yet the mean alveolar-arterial partial pressure of O_2 diff ($AaDO_2$) rose steadily with increasing intensity from 4.0 mm Hg at rest to 22.3 mm Hg at the highest work rate. The variance in transit time accounted for no more than 9% of the variance in $AaDO_2$ or in the arterial partial pressure of O_2 (PaO_2). Indices of relative hypoventilation did explain a larger proportion of the variance in PaO_2. The variance of the ventilatory equivalent for CO_2 accounted for 37% of the variance in PaO_2. It was concluded that neither diffusion limitation nor relative hypoventilation was the main cause of hypoxemia in this study.

179. WEST, J.M. Perceptions of self and physical activity in aculturally diverse physical education class. PhD in Physical Education, 1989. (A. Jewett)

The focus of this study was to determine how students in a culturally diverse fourth grade PE class made sense of themselves and physical activity. The following questions guided the research: (1) What are the children's definitions of self and physical activity? (2) How are the children's interactions in physical activity settings affected by, and how do they affect, their perceptions of self and physical activity? (3) What are the relationships between the perceptions of self, physical activity, and cultural background? The symbolic interactionist perspective was applied in an interpretive case study. Observational data were collected over the 5 mo period from Jan to early Jun, 1989. A preliminary 8 wks of observation preceded formal interviewss and a further 12 wks of participant observation. 3 rounds of student interviews were recorded. Teachers and selected parents were also interviewed. A combination of constant comparison and anal induction techniques was utilized during data collection and anal. 5 main categories, Competence, Commitment, Excitement, Compliance, and Social Status, emerged as sig in the children's perceptions Definitions of these as interpreted by the researcher were: (1) Competence was defined by the children's degree of success, confidence, and pride in their performance of physical skills; (2) Commitment was defined as being determined, meeting challenges, and being encouraged; (3) Excitement was defined in terms of exhilaration and joy; (4) Compliance was defined as obedience to game rules and to conduct and gender codes; (5) Social status was defined as derived from adopted and assigned social roles. Running through the student definitions of, and interrelationships among, the 5 categories is the theme of access to physical activity. Participant meanings of access to physical activity defined, and were redefined through, social interactions. Control of those interactions, therefore, controlled access to physical activity. Control was partially determined by how students made sense of themselves and their past and present mvmt exp. Some aspects of cultural background facilitated, restricted, or even denied access and, thus, the opportunity to enhance the quality of life through involvement in physical activity.

180. ZENG, L. Robustness of unidimensional latent trait models when applied to multidimensional data. PhD in Physical Education, 1989. (T.A. Baumgartner)

The robustness of unidimensional one- and two-parameter IRT models when applied to multidimensional data was investigated. The data sets used were simulated by a computer by utilizing a data generation model modified from a noncompensatory multidimensional model proposed by Sympson (1978). The dimensionality of the simulated item response data sets were manipulated by a dimensional strength parameter of the model which determined the proportion each ability dimension accounted for in the total probability of arriving at a correct response to an item. Data sets with various degrees of simulated multidimensionality were generated by changing the value of the dimensional strength parameter of the major dimension from 0 to 1. The unidimensional item and person parameter estimations were performed by applying the computer prog LOGIST to 10 of the simulated item response data sets, each of which had a sample size of 1000 examinees by 50 items. The obtained estimates of the parameters were compared with the simulated parameter values of dimension 1, which was treated as the ability that the instrument was developed to meas. The precision of estimation was evaluated in 2 ways: one, comparing the estimated parameters to the true parameter; two, comparing the item characteristic curves (ICCs) obtained from the estimated parameters to the true ICCs. It was found that the one-parameter model was quite robust and that parameter estimates with tolerable errors might be obtained from the multidimensional data sets with a major dimension which accounted for more than 80% of the total performance. The two-parameter model was less robust than the one-parameter model. The a parameter of the two-parameter model, which determined the slope of the ICC, was sensitive to the multidimensionality of the data. Even a minor violation of the unidimensionality assumption resulted in some intolerable errors in the a parameter estimation. The b parameter, which determined the difficulty of the item, and the θ parameter, which represented the person's ability, however, were less sensitive to the multidimensionality of the data than the a parameter. The estimates of the b and θ parameters with considerably smaller errors were obtained by applying unidimensional two-parameter models to multidimensional data sets with a major dimension accounting for at least 80% of the total performance.

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181. CROWHURST, M.E. *Determination of the fitness value of selected physical education activities*. EdD in Physical Education, 1989.

Numerous investigators have observed that youth fitness levels are on the decline. While the validity of these observations is a subject of some discussion, little has been done to objectively determine if typical PE class activities are rigorous enough to improve aerobic fitness levels. The purpose of this research was to determine if 2 typical PE activities met duration, intensity and energy expenditure guidelines (ACSM) for improving aerobic fitness. 9F Ss, ages 14 to 16, had data collected in the (1) laboratory and (2) field during 6 typical PE (3 BB and 3 floor hockey) classes. Laboratory data included VO_2, RER, and HR throughout a multi-stage cycle test to voluntary exhaustion. Laboratory meas VO_2 was regressed on HR to estimate the aerobic demand for each S from HRs monitored during field testing sessions. HRs were continuously meas during PE classes and VO_2 estimated from equations generated with laboratory data. Energy expenditure was estimated using a constant of 4.875 (Kcals/1) during exercise and 4.739 during inactive min. Results indicated that although PE classes were in excess of 45 min duration, Ss actually participated an ave of 22.3 min during BB and 18.3 min during floor hockey. Further, Ss were active at an intensity greater than 50% of their VO_2 max for an ave of only 14.9 min during BB classes and 9.8 min during floor hockey. Total energy expenditure during the classes ave 187 Kcals per class period during BB and 152 Kcals per class period during floor hockey. Based on this research, it appears that aerobic fitness may not be improved by participation in typical class activities. This research has implications for curr planners who develop health-related fitness prog for school children.

182. EGGERT, K.E. First metatarsophalangeal joint range of motion as a factor in turf toe injuries. MEd in Physical Education, 1990.

This investigation was undertaken to determine if limited ROM of the first metatarsophalangeal (MTP) joint predisposes an athlete to turf toe injury and if turf toe injury leads to reduced ROM. Factors such as post-injury ROM, incidence of previous injury, prophylactic orthotic-wear, shoewear, player position, and playing wt were examined in relation to the incidence of turf toe injury. Ss consisted of 119 Rice Univ football players tested between the Fall 1986 and Spring 1989 semesters. Ss completed a questionnaire to provide all information being investigated except ROM which the investigator meas using a goniometer. Results of this investigation indicate that ROM prior to turf toe could not predict turf toe injury. Post-injury dorsiflexion (DF) and total range of motion (TROM), however, were sig reduced compared to ave values for uninjured Ss. Prior injury sig increased the chance of subsequent turf toe injury. Reinforced forefoot shoes reduced the chance of turf toe while player position and playing wt had no effect on turf toe injury incidence. Results of this study indicate that one turf toe injury predisposes the athlete to a second turf toe injury, and DF and TROM in injured Ss are sig lower compared to uninjured Ss. Further investigation is necessary to definitively determine the relationship between ROM and turf toe injury.

183. JIBAJA-RUSTH, M.L. The development of a psycho-social risk profile for becoming a n obligatory runner. EdD in Physical Education, 1989.

Habitual physical activity has been shown to be related to coronary heart disease and all-cause mortality. The trend between caloric expenditure and both mortality and morbidity are non-linear, showing a dramatic trend from sedentary levels and leveling off at about 2,000 kilocalories per wk. This demonstrates that there is a threshold level of exercise related to health performance. A concern among mental health professionals is that many are exercising well beyond the health promotion threshold. Some are pushing their bodies to the limit and may not be able to "control" their urge to exercise. In their search for "super fit" bodies, individuals have exercised to the point of injury and perhaps, self-destruction. Running has been a major source of abuse by these individuals. This abuse takes the form of a high mileage. As mileage increases, an increased number of injuries have been reported. Many individuals are psychologically unable to stop running even when injuries are sustained. Previous running studies have focused on various aspects of running; some view this compulsion to run as a pos addiction while others have compared it to substance or drug addiction because of the detrimental and controlling forces that it has on the individual. The latter gp of researchers has termed this compulsion as neg addiction to running, or "obligatory running." Studies have identified several characteristics of obligatory runners. The characteristics can be classified into 3 categories: behavioral, psychological, and sociocultural. Some of the salient behavioral characteristics are: logging a large no. of miles, running daily, and running even though injured. Some psychological characteristics include a tendency toward introversion and neuroticism, and the need to be highly stimulated by the environment. Sociocultural characteristics include the social support available to the runners and the amount of free time available which can be dedicated to leisure type activities. Although the above characteristics have been identified in various studies, there has not been an attempt to build a model and to validate risk factors of obligatory running. In other words, by studying the characteristics of obligatory runners, it may be possible to establish a risk profile of obligatory running, or the risks of a fitness runner in becoming an obligatory runner. The objective of this study was to dev a psycho-social risk profile of an obligatory runner. An Adult Running Questionnaire was distributed to 500 runners (M and F) at various running sites around the Houston area. The questionnaire was divided into 7 sections: demographic, participant running/exercise activity history, social support meas, leisure time meas, compulsive running questionnaire, sensation seeking meas, and the introversion/neuroticism meas. The independent variables included: stimulation and arousal needs, neuroticism, introversion, social support, and leisure time available. The dependent variable was obligatory running. Data were anal using the Statistical Anal System (SAS) Computer Prog. Multiple regression was used to identify and quantify the psychological domains of obligatory running. The results of this anal showed that neuroticism was the only independent variable that was related to obligatory running, but it accounted for a small percentage of the obligatory running variance (7.6%). The ave neuroticism score for this sample was located towards the "stability" side of the neuroticism continuum. The results also revealed that obligatory running was not a yes or no condition but rather that it was a matter of degree. Thus, obligatory running appeared to occur along a continuum, from low to high addiction. The degree of obligatory running for this sample was located towards the low end of the continuum. The runners of this study tended to be extroverts, tended to be low sensation seekers, perceived themselves as having strong social support, and their amount of leisure time did not affect their level of addiction to running.

184. MAHAR, M.T. Accuracy of heart rate models for estimating exercise intensity. EdD in Physical Education, 1989.

HR is commonly used to prescribe exercise intensity. This study examined the accuracy of 4 methods of exercise prescription which use HR to estimate exercise intensity. The 4 methods evaluated included 2 popular techniques: the percent of max HR method and Karvonen's max HR reserve method (Karvonen, Kentala, & Mustala, 1957). A third method was derived from Astrand's single stage model (Astrand & Ryhming, 1954) to estimate VO_{2max} from submax power output (Jackson & Ross, 1986). The fourth method was a regression model dev for this study. The newly dev regression model estimated exercise HR from $\%VO_{2max}$ and max HR. The accuracy of the 4 models was compared when max HR was meas and estimated from 220 - age (Fox, Naughton, & Haskell, 1971). Ss consisted of 1,835 M employees of NASA/Johnson Space Center, Houston, TX. A max treadmill exercise test was admin to each S as part of their yearly physical exam. The Bruce treadmill protocol (Bruce, Kusumi, & Hosmer, 1973) was utilized and VO_2 and HR were meas continuously. VO_2 determined directly at max intensity and at a submax level were used to calculate $\% VO_{2max}$. A single exercise level between 50% and 85% VO_{2max} (ACSM, 1978) was used to quantify exercise intensity at the submax level. Metabolically derived $\% VO_{2max}$ and max HR, either meas or estimated by 220 - age, was used with each method to estimate submax HR. The total sample was randomly divided into 2 equal samples. The first sample was used to dev a new HR regression model. The second sample was used to cross-validate the newly dev regression equation and compare its accuracy with the other 3 models. Zero-order product-moment correlations between meas and estimated HR from each model ranged from 0.68 to 0.80. Models which used meas max HR had higher correlations than models which used 220 - age. Mean diff between meas and estimated HR were calculated to examine if a systematic bias exists in metabolically determined exercise intensity. The regression model dev for this study predicted the mean exercise HR within 1 beat per min when cross-validated. The other models all exhibited a systematic bias in the prediction of mean exercise HR. The percent max HR model was least accurate and underestimated mean exercise HR by 17 beats per min. When HR is prescribed to establish exercise intensity, it is prescribed for an individual rather than a gp. The standard error of estimate (SEE) was calculated from exercise HR predicted from each model and meas exercise HR for the selected exercise intensity. The SEE provides an estimate of the meas error (beats per min) for each model. All standard errors were high (≥11 beats per min). The standard errors for the models which incorporated meas max HR were 1 to 2 beats per min less than the same models which used age to estimate max HR. These results suggest that prescription of exercise intensity through HR is relatively inaccurate and that the use of meas max HR has little effect on the accuracy of HR prescription.

185. POUNCEY, A.A. An analysis of positive exercise stress tests in a clinical cohort. MEd in Physical Education, 1990.

The ultimate objective of this study was to dev a logistic regression equation that estimated the probability a pos exercise test is a true pos (TP) test. All Ss were patients at Kelsey-Seybold Clinic, Section of Cardiology. Ss consisted of all patients who had a pos exercise stress test (N=581) between Aug 1987 and Aug 1989, and a random sample of those patients who had a neg exercise test (N=104) during the same time period. M made up 76% of this cohort (Mean age = 57.7, ± 9.7) and F 24% (Mean age=57.0, ± 10.1). Ss were further grouped according to which diagnostic pathway they followed after performing a pos exercise test. In comparison to patients with a neg test, patients with a pos test were older, more likely to have previously documented CAD, had lower peak aerobic capacities, peak HR, and reported a higher activity level. Logistic regression anal was used to dev 2 statistical models that estimated the probability a pos stress test was a TP test. One model consisted of gender and VO_2 peak, and the second model included gender with rate pressure product (RPP). Within the Kelsey-Seybold cohort, M with a rate pressure product <250 have an 80% chance of a TP test, while F with a RPP <250 have a 50% chance. When using estimated peak aerobic capacity, men with a VO_2 peak <25 ml/kg/min have a 70% chance of a TP test. F with a VO_2 peak <25 ml/kg/min have a 50% chance of a TP test.

186. SHEFFIELD, M.J. Validity of a self-report instrument for measuring physical activity in third grade students. MEd in Physical Education, 1990, 68 pp. (J. Morrow, Jr.)

The Physical Activity Interview (PAI) instrument was studied to determine its validity for meas moderate to vigorous physical activity (MVPA) in third grade students. 31 third grade students (20 boys, 11 girls, M age = 8.35) wore HR monitors continuously for 12 hrs while they participated in their normal daily activities. 2 trained observers used the Children's Physical Activity Rating Form to observe the amount of MVPA the children performed during PE classes. HR and direct observation served as criterion meas for the PAI self-reported MVPA during PE, while HR alone served as the criterion score for the PAI total day self-reported MVPA. Pearson correlation coefficients were calculated between the no. of min of PAI self-reported MVPA and the no. of min HR >140b/min during PE (r[31]=-.03,p<.86), the no. of min of PAI self-reported MVPA and the no. of min of observed MVPA during PE (r[31]=-.09,p<.60), the no. of min of observed MVPA and the no. of min HR >140 b/min during PE (r[31] =.30,p<.10), and the no. of min PAI self-reported MVPA and the no. of min HR >140 b/min during the 12 hr HR monitoring period (r=[31]=.20,p<.27). Mean MVPA min were sig diff for HR (M = 3.06 min), observation (5.43 min), and self-report (12.57 min), F(2,30) = 31.76,p<.0001. Results indicate that the PAI is not a valid instrument for meas MVPA for 8 and 9 yr old children during PE.

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187. CLARKE, L.C. Intralimb coordination in mature walking: Does the lower extremity act as coupled non-linear limit-cycle oscillators? MA in Kinesiology, 1990. (J.E. Clark)

Within the dynamical systems perspective, studies on walking and precursory mvmts to walking have attempted to meas coordination and identify coordinative structures. Using this perspective, the present study proposed that intralimb coordination exploited the dynamic properties of the body, and these properties could be associated with the properties of the coupled non-linear limit-cycle oscillator. To test for the properties of entrainment, phase-locking, and structural stability in the intralimb coordination of the shank and thigh in mature walking, 9 F Ss were filmed while walking at their preferred speed. 5 conditions were filmed to test the coordinative structure and elucidate the presence of coupled non-linear limit-cycle oscillator properties. 1 normal walking condition, 3 ankle wt perturbation conditions of 7.5%, 12.5%, and 17.5% of the S's bw, followed by another baseline condition were filmed over 4 continuous cycles. Coordination among the shank and thigh during walking was meas by a phase angle on a phase plot. Invariance in the angle by the 4th cycle reflected the attainment of structural stability and a phase-locked state. In accordance with the dynamic systems perspective, it was hypothesized that the wts would either shift the system out of its phase-locked state only briefly, or that the wts would be sufficient to shift the system away from its normal mode and into a new phase-locked state. Evidence from this study suggests the presence of non-linear limit-cycle oscillator properties in intralimb coordination for mature walking.

188. COATES. J.R. Sport and leisure in the African-American community of Baltimore, 1890-1920. PhD in Kinesiology, 1991. (N.L. Struna)

The sporting and leisure pursuits of African-Americans in Baltimore between 1890 and 1920 were varied and complex. There was no single unifying element for participation in an activity as a race. What was very much present, however, was the infusion of class as a meas of what activities one participated in. Those members of the African-American middle class, and the upper class called the "Four Hundred" were against the use of the city's parks for active physical sports such as baseball. This same segment of the comm also showed its disdain for the sport of boxing, unless it was practiced or performed by a member of its own status. And only then if the sport was referred to as the "Manly Art of Self-Defense." Laborers of the African-American comm were for the most part unified in their choice of leisure, which included lively music, drinking and partying atmosphere. The neighborhoods of the laborers were lined with saloons. One street in particular, Pennsylvania Ave, became the center of night life in the African-American comm. Despite the internal division of the African-American comm it was ultimately the segregationists policies of the white city fathers that determined black leisure activities. The laws governing the use of public spaces and facilities severely restricted use by African-Americans. Ultimately, this would limit the activities of African-Americans. Through all of the restrictions placed upon it, from the dominant culture, and the class divisions within, the African-American comm united in its efforts to combat unfairness thrust on it from social and governmental forces. Some African-Americans prospered as businessmen and entrepreneurs because of the desires and wishes of their comm members to sport. These businessmen and entrepreneurs provided the opportunities that the city did not, thus enabling the African-American comm of Baltimore between 1890-1920 to sport.

189. CONFESSORE, R.J. Quantification factors describing physical activity involvement and their relationship to current criterion reference standards for aerobic capacity in children and youth. PhD in Kinesiology, 1990. (C.O. Dotson)

A secondary anal of the National Children and Youth Fitness Study I (NCYFS I) was conducted to compare the physical activity habits of children and youth classified according to the Fitnessgram (FG) and Physical Best (PB) aerobic capacity criterion reference standards (CRS). The investigation utilized physical activity survey and mile run/walk performance data from 3,280 boys and 1,433 girls. 3 gps across all ages/gender were constructed. The first gp (Unfit) consisted of children and youth who failed to achieve either aerobic capacity CRS. A second gp (FG) was composed of children and youth whose mile run/walk score was above the FG CRS, but failed to meet the PB standard. Children and youth whose mile run score met or exceeded the PB CRS, but failed to achieve the 75th percentile, comprised the third gp. MANOVA, factor anal, and canonical discriminant anal were employed to identify diff among the aerobic capacity CRS gps. The PB CRS gps were more active during the fall/winter seasons. The boys PB CRS gp reported the greatest amount of total activity, quantified by estimated monthly caloric expenditure and time engaged in activity. In the boys anal, the unfit gps and FG CRS gp could not be distinguished from each other, at any grade level, relative to this factor. It was concluded that (a) children and youth who achieve an aerobic capacity CRS can be distinguished from those who do not on the basis of physical activity participation, (b) the aerobic capacity CRS gps can be distinguished from each other on the basis of physical activity participation, (c) physical activity outside PE, as well as PE prog factors, are important in explaining diff among aerobic capacity CRS gps, and (d) the Physical Best aerobic capacity CRS appear better able to distinguish between children and youth aerobically fit and unfit, based upon physical activity involvement.

190. CRAIG, M.P. The effects of a twelve week program of circuit weight training on the lipoprotein-lipid profile of male cardiac patients. PhD in Kinesiology, 1990. (C.O. Dotson)

To test the hypothesis that circuit wt training favorably modifies lipoprotein-lipids in cardiac patients, 12 M (58 ± 9 yrs) with at least 6 METS exercise capacity who had completed at least 3 mos of phase III cardiac rehab, participated in 12 wks of circuit wt training. 10 sedentary M cardiac patients served as controls. Ss were admin the following pre- and post-training evaluations: Symptom limited max treadmill stress test, 7 day dietary record, lipoprotein-lipid anal, body comp by skinfold anal, and a one rep max lift on 10 Universal machines. The circuit wt training prog met 3 times per wk and consisted of 2 sets of 12 stations. Ss performed 10 to 15 rep in 30 sec, lifted 40% of a 1 rep max and rested 30 sec between stations. Circuit wt training Ss increased upper body strength by 12% ($p < 0.01$) and leg strength by 23% ($p < .013$). Bf and max treadmill duration did not change sig as a result of the training. There were no lipoprotein-lipid diff between the gps at baseline and neither gp changed any lipoprotein-lipid meas after training. Thus, while circuit wt training improved upper body and leg strength, it did not change lipoprotein-lipids in this gp of cardiac patients.

191. DARDEN, G.F. The effects of visual training on selected visual abilities and performance of a motor skill. MA in Kinesiology, 1990. (E.Y. Brown)

The purpose of this study was to investigate if incorporating visual training techniques would enhance visual abilities and ultimately performance motor skills. A visual training enhancement prog utilizing the AcuVision 1000TM was evaluated for its effect on RT, peripheral vision (horizontal and vertical), and a battery of BB skills. 30 M volunteers enrolled in a beginning BB class at the Univ of MD participated in the study. Ss were randomly assigned to an exp gp (N=17) receiving visual training along with skill instruction, or a control gp (N=15) in the same class receiving identical instruction but no visual training. Exp Ss attended

15 min supervised training sessions 3 days per wk for 5 wks. Following screening, all Ss were tested on the Lafayette Reaction/Movement Timer, Bernell Arc Perimeter, and 3 AAHPERD standardized skills test meas BB ability (passing, shooting, dribbling). All tests were readmin at the end of 5 wks. Results were anal using a 2 x 2 factorial design ANOVA. Univariate tests revealed sig pre-post diff between gps in both horizontal peripheral meas, and in 1 RT meas ($p < .0.05$). Post-hoc anal, utilizing the Bonferroni T, was performed on the main effects to assess the sig interactions. No effects were observed between gps for any of the skills test meas. Pre-post interactions revealed sig effects for all skills tests ($p < 0.05$). Nonsig diff revealed the training gp improved slightly over the control gp in all meas of visual abilities and BB skills. The results support the contention that certain visual abilities are trainable, but provides no evidence that these improvements transfer to sig improvements in motor skill performance.

192. DAWSON, P.K. Effects of training on resting blood pressure in men at risk for coronary heart disease: Strength vs aerobic exercise training. MA in Kinesiology, 1990. (B.F. Hurley)

To compare the effects of strength training to those of aerobic exercise training on resting BP, 15 untrained M (50±9 yrs, X±SD) were studied before and after 16 wks of training. 5 M were assigned to either a walk/jog prog, a strength training prog, or an inactive control gp. All Ss were at risk for coronary heart disease (CHD). Resting SBP and DBP were assessed 3 times daily on 4 diff days for both supine and seated postures. Strength training consisted of 2 sets of 12 Nautilus exercises performed 3 times per wk. Aerobic exercise training consisted of treadmill walking/jogging at 75-85% of max HR reserve for 30 min 3 times per wk. 5 sedentary M completed the same testing procedures at similar time intervals and served as control Ss. Sig reductions ($p < .033$) in resting SBP and DBP resulted from aerobic exercise training. No sig changes in BP resulted in the strength training and control gps; however, some individuals in the strength training prog exp large reductions in resting BP. These results suggest that strength training does not lower resting BP similarly to aerobic exercise training, but it does appear that either training modality may lower resting BP for some individuals. More research is needed using larger sample sizes to confirm these conclusions.

193. DECKER, K.R. Aerobic and anaerobic performance measures in active and inactive young and middle-aged males. PhD in Kinesiology, 1990. (D.H. Clarke)

The purpose of this investigation was to obtain insights regarding the effects of aging and activity level on aerobic and anaerobic capacity, performance, and body comp of active and inactive young and middle-aged M. It was hypothesized that if training was maintained, selected physiological variables would not change over a 30 yr period. 30 strength and endurance trained athletes were subdivided into 3 age gps of 10 Ss each. The means for the 3 active age gps were 20.9 ± 2.2 yrs, 35.4 ± 2.3. yrs, and 49.4 ± 1.4 yrs. These active athletes were selected on the basis of their training regimens and each S devoted an equal amount of time between endurance and strength training. These 30 trained M were matched with 30 untrained M also subdivided into like age gps of 10 Ss each. The means for the three inactive age gps were 21.7 ± 1.1 yrs, 35.7 ± 2.2 yrs, and 50.3 ± 1.5 yrs. A 2 x 3 factorial ANOVA was used in this investigation to anal all variables with respect to age and activity ($p < 0.05$). Diff between variables as a function of age were tested by regression anal using a student's t-test ($p < 0.05$). %bf was sig lower in the active age gps compared to the age matched inactive gps (p 0.05). Sig diff which favored the active age gps were also seen when comparing these same 2 gps during submax exercise with regard to HR, rate pressure product (RPP), and RPE during stages 2 and 3 of the Bruce protocol ($p < 0.05$). Sig diff favoring the active age gps compared to the inactive age gps were seen on meas of VEmax (1/min), VO2max (1/min and ml.kg-1.min-1), O2 pulse (ml.kg-1.beat-1), TRT max (min), METS, MPO30sec (kgm/kg) and MPO5sec (kgm/kg). In both the inactive and active age gps, VO2max (1/min and ml.kg-1.min-1) and MPO30sec (kgm/m and kgm/kg) showed sig decreases at approx 35 yrs of age ($p < 0.05$). %bf also increased sig in both the inactive and active age gps at approx 35 yrs of age ($p < 0.05$). When ave per decade, the VO2max (ml.kg-1.min-1) decrease in the active age gps represented about 5% as compared to 10% in the inactive age gps. These data concerning the decrease in VO2max with age concur with other studies using both active and inactive M. MPO30sec (kgm/kg) declined between 6 and 7% in the active age gps compared to the same for the inactive gps. In all cases, the VO2max and MPO30sec values in the active age gps were sig higher than the inactive gps regardless of the percent decreases with age. These findings suggest that the major factors responsible for the lower VO2max and max anaerobic power output of the older active age gps compared to the younger actives are: (1) their slower HR, and (2) body comp changes that may have been related to aging and/or the type of training performed.

194. FRENCH, J.M. The effects of a school-based exercise program on selected fitness components of children. MA in Kinesiology, 1989. (P. Vaccaro)

The purpose of this study was to investigate the effects of a 6 wk school-based exercise prog on cardiorespiratory endurance, muscular endurance, muscular strength, flexibility, and body comp. 16 boys and 16 girls, age 8 to 11, were randomly divided into 2 gps; 8 boys and 8 girls were placed in an exp gp and 8 boys and 8 girls were placed in a control gp. The exp gp participated in a specified circuit exercise prog twice weekly for 6 wks. The exercise prog consisted of a variety of 60 sec exercises which were alternated with 60 sec jogging/walking intervals. 10 rep of exercise and jogging/walking were accomplished in the allotted 20 min. Project Superfit, MD's Physical Fitness Test(MD Commission on Physical Fitness, 1987) was admin to both gps before and after the 6 wk exercise prog. A follow up test was admin 6 wks following the exercise prog to meas detraining effects. A paired t-test indicated no sig diff (p > .05) between gps on all fitness parameters. The 20 min school-based circuit exercise prog, which was admin 2 days per wk for 6 wks, did not alter cardiorespiratory endurance, muscular endurance, muscular strength, flexibility, and body comp.

195. GEMS, G.R. Sport and culture formation in Chicago, 1890-1940. PhD in Kinesiology, 1989. (N. Struna)

The study draws upon American sport history, labor history, and the cultural hegemony concept of Antonio Gramsci to examine the formation of sporting culture in Chicago between 1890 and 1940. The sporting culture of the earliest residents of Chicago followed pastoral ideals. The Indian tribes and French-Canadian trappers who inhabited the region engaged in utilitarian pastimes, such as hunting and fishing, and irregular bouts of drinking, dancing, and gambling similar to other frontier societies. That rustic lifestyle changed abruptly as eastern settlers, predominantly New Englanders, quickly subsumed the old culture in the 1830s. The sleepy village became an urban center as easterners replaced the largely subsistence economy with a commercially-oriented market one. In so doing, they also attempted to organize and regulate leisure practices. The European migrations of the antebellum years introduced alternative leisure practices and Old World cultural values that differed with those of the Americans. Labor and leisure issues came to a head in the violent labor confrontations of the latter 19th century. As an alternative to such hostility, progressive reformers attempted to infuse ethnics with "American" values through a wide range of competitive sports and games in both public and private agencies. Such programs confronted the already established leisure practices of the street culture and the ethnic athletic clubs. Rather than effect a passive imposition of mainstream values on subordinate groups, the process of culture formation required an active accommodation among the divergent groups. That process resulted in both adoptions and adaptations of the middle class leisure practices and values. This study maintained that a pluralistic model of culture transpired. It refutes sociological interpretations of sport as a reflection of society. The study contradicted the "melting pot" theory of assimilation, and stated that subordinate groups have had a dynamic role in the formation of culture. It was concluded that subordinate groups adapted commercialized sport organizations and structures of the "natives" to fit their own ethnic or class values. Sport came to serve as a cohesive social bond in a mass culture that incorporated divergent groups, but sporting practices continued to hold different meanings for Chicagoans.

196. GIAT, Y. Prediction of muscular synergism and antagonism of
human upper extremity—A dynamic optimization approach. PhD in
Kinesiology, 1990. (D.L. Kelley)

A simulation of the skeletal and muscular dynamics of the upper extremity was conducted in an attempt to compute the activity which occurs in each muscle when a comfortable mvmt is performed. The right upper extremity was modeled as a 2-bar linkage moving in the vertical plane of the scapula. The musculotendon actuation system was modeled in terms of 12 muscles moving in 3-dimensional space. Each muscle was governed by 2 ordinary differential equations: one for its mechanism and another for its activation. The anal revealed 40 ordinary differential equations governing the dynamics of the upper extremity. Specific muscle parameters were obtained by performing a cadaver dissection; specific skeleton parameters were taken from 3-dimensional anthropometric meas. These parameters were then scaled to fit each S. The muscular activity was then computed utilizing a bang-bang optimal control procedure, while the muscular stress, joint constraint forces, and neural excitation were minimized. The results obtained from the simulation prog describe all the dynamic events that take place in the upper extremity when the investigated mvmt is attempted. The computed results reveal that the upper extremity performed the expected motion in a way somewhat similar to that which had been recorded experimentally. Because of the amount of computation involved and limited computer availability, the simulation prog was executed to perform the task in a substantially shorter time interval than it took the Ss to perform the task. This disallowed a comparison between the computed neural excitation and the experimentally-recorded EMG activity. The computed muscle tension histories describe the synergistic and antagonistic activities that occur in the upper extremity when the simulated mvmt takes place. Recommendations are made to include in the model the effect of the bony and ligamentous support; to modify the cost function and the activation model so that a nonlinear, as opposed to a bang-bang, optimal control algorithm is used; and to economize the overall computation, particularly that of the costate vector.

197. HALLER, C.F. Effects of occluding segments of ball flight
trajectory on the catching performance of children and adults.
MA in Kinesiology, 1988. (J.E. Clark)

According to direct perception theory, perception is continuous. Visual information only needs to be sampled for a short time by the observer. The future location of a ball in motion, therefore, should be immediately determined by the observer. Any perturbation of the ball flight such as occluding its path at various points should not disrupt accuracy of catching performance. 45 7 and 9-yr-old and adult right-handed M were videotaped engaged in a single-handed catch. A throwing device was used to toss hard-core sponge balls. A screening device was used to occlude the first, middle, or last segments of ball flight. Ss received a total of 10 trials for each condition of occlusion and 10 trials without occlusion. Performance scores were evaluated for hand position and grasp. Results indicated that adults and 9-yr-olds were sig diff from 7-yr-olds during the hand positioning phase in all conditions. Baseline and occlusion of the last segment were statistically diff from occlusion conditions of the first and middle segments for the 7-yr-olds. Results of the grasp phase indicated that adults were sig diff from the 7 and 9-yr-olds in all conditions; 9-yr-olds were sig diff from the 7-yr-olds in all conditions. Occluding vision of the last segment sig affected grasp performance of the 7-yr-olds. The results of this study indicated that there is a developmental trend in which one-handed catching performance improves with increasing age. Occlusion of the last segment of ball flight for the 7-yr-olds has a detrimental effect on hand position and grasping. The suggestion is that vision plays a critical role in catching and that restricting viewing on the last segment for this age gp may be important in fine tuning the act of catching.

198. HANNAH, J.M. The use of oxygen consumption and blood lactate measures in training for peak championship swimming performance. PhD in Kinesiology, 1990. (C.O. Dotson)

11 swimmers ages 15-18 trained under guidelines established by US Swimming (USS) in 1986 were tested monthly to determine if training for specific target event distances resulted in superior championship competition performances at those distances when compared to offtarget events. Testing procedures were dev by Troup and Daniels to assess training progress. All Ss performed 4 x 400 yd timed freestyle swims under controlled conditions, each at a specific intensity level. These were: Aerobic Pace (AP), Aerobic Overload (AO), Lactate Tolerance (LT), and Max Lactate Production (MLP). The criterion meas defining each intensity level were blood lactates and VO_2. Data anal revealed a sig pre-post effect for all championship performance times. When all 11 Ss were included in the anal, no sig diff existed between mean improvements in ontarget (M=2.381%) and offtarget (M=2.659%) events. Case study anal revealed that the 7 Ss (G-7) with 200m ontarget and 100m offtarget event distances recorded the greatest mean championship ontarget (3.115%) and offtarget (3.663%) improvements in performance time. The G-7 conformed to the ideal criterion meas training profile suggested by Troup and Daniels better than either the remaining 4 Ss or gp as a whole. Results indicate that conformity to the Troup-Daniels profile, particularly in blood lactate meas, is a reliable predictor of championship meet performance. However, when the aerobic and anaerobic energy demands of ontarget and offtarget events are similar, the following statements appear to be supported: (1) The USS training protocol is not sufficiently distance specific to preclude sig offtarget event improvements. (2) The criterion meas indicate physiological

preparedness for more than the ontarget event. Conclusions based on the data obtained in this investigation suggested that the Troup-Daniels test is an appropriate predictor of championship competition success for Ss trained under USS guidelines.

199. HUCZEL, H.A. Comparative muscular strength and fatigability of physically inactive and strength-trained females. MA in Kinesiology, 1989. (D.H. Clarke)

The purpose of this study was to compare muscular strength and fatigability of the elbow flexors of strength-trained (ST) and untrained (UT) F during a 6-min bout of max rhythmic exercise at a rate of 30 contractions per min. Force received by a load cell was converted into electrical energy and tranmitted to a Beckman Type RS Dynograph. 15 ST and 15 UT Ss, ages 18-34, were tested for diff in initial strength, final strength, absolute endurance, relative endurance, and rate of fatigue. Gps were pair-matched according to body mass index (BMI). Means were compared for the 2 gps on the exp variables, and rates of fatigue were determined by exponential curve fitting procedures. Results revealed a sig diff in initial strength, final strength, and absolute endurance in favor of the F bodybuilders. No sig diff was detected for relative endurance between the gps and rates of fatigue were similar for the ST and UT gps. It is concluded that muscular strength and endurance is enhanced simultaneously in F Ss as a result of engaging in a training prog designed primarily to increase muscular strength and hypertrophy.

200. HUNT, M.Q. Gradual aging effects in relation to muscular fatigue in active and inactive males. MA in Kinesiology, 1990. (C.O.Dotson)

The purpose of this study was to investigate whether muscular strength and fatigue varies with aging on a population of M, and whether wt training alters any aging effects. The study tested the strength and fatigability of the elbow flexors of active and inactive M through 3 separate age increments between the ages of 18 and 52. The Ss performed a 6 min bout of max rhythmic contractions with the elbow flexors of the dominant arm at a rate of 30 contractions per min. Force received by a load cell was converted into electrical energy and transmitted to a Beckman Type RS Dynograph. 62 Ss were tested for diff in initial strength, final strength, absolute endurance, relative endurance, and rate of fatigue, in relationship to age and activity level. Statistical comparisons of means of the exp variables were found using a 2-factor ANOVA and Scheffe F-test, and rates of fatigue were determined using a single-component exponential equation. Results revealed a sig decrease in muscular strength, relative endurance, and absolute endurance with age, with no sig diff in final strength. Sig diff were also found between active and inactive Ss in initial strength, absolute endurance, and final strength in favor of the active Ss. No sig interaction was found between activity level and age; however, a general trend was noted that, with increasing age, the active Ss showed less of a decrement in muscle force responses than the inactive Ss in all tests with the exception of relative endurance.

201. JENNINGS, A. The effect of perception of performance outcomes on mood following exercise. PhD in Kinesiology, 1990. (D.H. Steel)

Over the last 20 years the effect of exercise on mood states has received considerable attention. Numerous studies have evaluated mood changes following exercise and most have shown there is a pos change in mood. Psychoendocrinological changes, such as endogenous opiates and catecholamines, changes in cortical activity, and changes in muscle tension have been evaluated and thought to contribute to the changes in mood following exercise. No study has evaluated the possible confounding effect of psychological variables that may influence the physiological mechanisms. Attribution theory, grounded in social psychology, suggests causal attributions for performance outcomes can influence affective reactions. In some sport related studies, state anxiety and some higher order mood factors have been shown to change in a pos direction for successful athletes. These studies have not controlled for the duration, frequency, or intensity of the exercise and consequently add little to our present understanding of the relationship between the physiological and the psychological factors. This study evaluated the perception of performance outcomes (success and failure) on mood during exercise, while controlling for exercise. M Ss (N=42) were recruited from aerobic activity classes and randomly assigned to a success gp, failure gp, or control gp. All Ss exercised for 20 min at 70% of their CV capacity and received either success fb, failure fb, or no fb regarding their physiological performance. The profile of mood states bi-polar form was admin pre- and post-exercise. The results indicated that Ss in the success gp and failure gp were sig diff post-exercise for scores on 5 of the 6 subscales of POMS B-1 and for total mood scores. Based upon the anal of this data it is evident that a psychological factor, such as perception of performance outcomes, influences the mood changes associated with exercise. Future studies that evaluate mood changes following exercise must be cognizant of the Ss' perception of their performance.

202. KEPPLE, T.M. Validation of a video-based, six degree-of-freedom mechanical analysis procedure for application to human movement. MA in Kinesiology, 1989. (D.L. Kelley)

This thesis was designed to validate a video-based procedure for anal the motion of rigid bodies for the eventual application to human motion. The procedure, named MOVE3D, evaluates 6 df motion by monitoring the 3-dimensional spatial coordinates of target markers fixed to the rigid body. A Vicon meas system consisting of four 50 Hz video cameras and a single force plate was used for data acquisition. AMASS software reduced the video data to 3-dimensional coordinates. The marker coordinate data were low pass filtered at 3.0 Hz by a fourth-order Butterworth digital filter. A pendulum was used to evaluate the accuracy of the kinematic and kinetic meas for 3 test conditions, with the direction of the axis of rotation varying between conditions. Data from 5 trials, with 5 cycles per trial, were obtained for each test condition. RMSE and error ranges were determined. Angular displacement RMSE of less than 1° and angular velocity RMSE of less than 5.0°/sec RMSE were obtained. The acceleration and force meas were characterized by decreased accuracy due to the introduction of noise at substantially higher frequency than the signal. The validation of the net moment estimates was hindered by the small amplitude of the pendulum driving moments. This thesis demonstrated that with the exception of motions of very small amplitude, a video-based data collection system can be used to obtain 6 df meas of the motion of rigid bodies.

203. MAHON, A.D. The effects of endurance training on cardiac output, blood lactate and VO_{2max} in male children. PhD in Kinesiology, 1990. (P. Vaccaro)

The purpose of this study was to examine the effects of a 14 wk endurance training prog on VO_{2max}, cardiac output (Q) at 50% and 75% of VO_{2max}, and blood lactate concentrations at 50% and 75% of VO_{2max} and at VO_{2max} in M children. 26 children, 8 to 12 yrs of age, volunteered to participate as Ss. 13 children served as exp Ss, while the other 13 children served as control Ss. Exercise testing was performed prior to and following the training prog. An incremental exercise test was employed to determine VO_{2max} and max blood lactate concentration. On a separate day, Q was meas using the CO_2 rebreathing technique (equilibration method) at 50% and 75% of VO_{2max}. Blood lactate concentration was also assessed at each of these workloads. Training consisted of a combination of continuous running performed at 70-80% of VO_{2max} and interval running performed at 90-100% of VO_{2max} was utilized. ANCOVA was employed to probe all variables for sig diff that could be attributed to the training prog. There were no sig diff between gps with respect to age, ht and wt following training ($p > .05$). Following training, VO_{2max}(L/min and ml/kg/min) was sig higher in the runners than in the controls ($p < .05$). VO_2 at 50% and 75% of VO_{2max} was sig higher in the runners than in the controls (L/min and ml/kg/min) after training ($p < .05$). Following training, a-VO_2 diff at 50% and 75% of VO_{2max} was sig greater in the runners than in the controls ($p < .05$). There were no sig diff between gps with regard to HR, SV, and Q at both 50% and 75% of VO_{2max}. Blood lactate concentrations at 50% of VO_{2max}, 75% of VO_{2max}, and at max exercise were not sig diff between gps ($p > .05$). These results suggest that endurance training will increase VO_2 during submax relative workloads as well as during max exercise. The improvement in VO_2 at 50% and 75% of VO_{2max} were the result of an enhanced a-vO_2 diff which could be attributed to the running prog. Blood lactate concentrations during submax relative to exercise and during max exercise are unaffected by this type of training.

204. MATHIS, S.C. Finger contact force-time curves measured in a simulated rock climbing situation. MA in Kinesiology, 1989. (C.O. Dotson)

The primary purpose of this study was to investigate the relationship between face climb angle, foothold size, and rock climbing ability on force exerted on the handhold during a simulated rock climbing situation. Two foothold sizes and 3 climb angles were set for this study. The following variables were meas: max voluntary finger contact force (MVFCF), max finger contact force used to step into position on the test climb (MFCF), mean finger contact force used to maintain position on the test climb (FCF), and time to finger contact fatigue (FF). A secondary purpose of this study was to determine which variables correlated with rock climbing ability. 5 F and 15 M rock climbers (18-57 yrs) from the Washington, DC area volunteered for the study. The skill range of the climbers was from 5.4 to 5.12 YDS with yrs of exp from 1 to 12 yrs. Visual anal of the force-time curves generated showed that the Ss produced a peak of force as they stepped into position and then held a fairly flat curve for the duration of their time on the test climb. Data anal showed that MFCF and FCF were more dependent on foothold size than on climb angle. Climb angle did affect MFCF and FCF for climbers on large footholds but climb angle did not sig affect MFCF of FCF for climbers on small footholds. Variables that correlated highly with climbing ability were: MVFCF, yrs of rock climbing exp, MFCF on large footholds, mean FCF on large footholds, and time to FF on small footholds.

205. MORALES ERO, J.O. Muscle stretch amplitude and load associated with vertical jump performance, muscle elastic contractile properties, and myoelectrical activity. PhD in Kinesiology, 1990. (D.L. Santa Maria)

11 M Ss participated in a study to examine the influence of skeletal muscle stretch amplitude and load on vertical jump performance, muscle's elastic/contractile properties, and myoelectrical activity. Ave integrated electromyograms (IEMG), knee joint angular displacement, vertical ground reaction force, and vertical jump ht were meas while Ss executed max voluntary static jumps (SJ), counter-mvmt jumps (CMJ), and drop jumps (DJ) on a Kistler force platform. Ss performed DJs from hts of 40 (DJ40) and 55 cm (DJ55). All jumps were performed with a small and large knee angle amplitude. Ave IEMG activity was recorded from the vastus lateralis, gluteus maximus, and gastrocnemius muscles of the

right leg. Knee angular displacement was recorded using a Penny-Giles electrogoniometer fixed to the lateral side of the left knee joint. Mechanical eccentric and concentric parameters (e.g., force, velocity) derived from CMJs and DJs were compared to jumps without an active stretch (SJs). Information dealing with the behavior of the muscle's elastic/contractile properties during the various jump tests was obtained by examining the ave IEMG/Force (I/F) ratios corresponding to the concentric contraction phases. For vertical jumps involving active stretch (CMJ, DJ40, and DJ55), the jump ht and ave concentric force were influenced more by stretch amplitude (knee angle) than by stretch load (drop hts). The greater the stretch amplitude, the higher the jump ht ($p<0.01$) but the smaller the resulting force ($p< 0.01$). For ave concentric velocity and power, the greater the stretch load, the greater the resulting velocity and power (CMJ vs DJs, $p<0.06$); the greater the stretch amplitude, the greater the velocity (DJs only, $p<0.05$) but the smaller the resulting power (CMJ and DJs, $p<0.01$). Only for the gastrocnemius, the greater the stretch load, the lower the resulting I/F ratio (CMJ vs DJ55, $p<0.05$) regardless of stretch amplitude. It was concluded that the gastrocnemius shows a greater utilization of elastic/contractile potentiation compared to the vastus and gluteus muscles. Regardless of stretch amplitude, load, and muscle, the ave IEMG activity corresponding to the concentric contraction was greater than that of the eccentric contraction ($p<0.05$). It was concluded that long-latency reflexes are involved in active stretch jumping in which the eccentric contraction is at least 150 msec long. This involvement was not dependent on stretch amplitude and load.

206. MOYER, M.R. The effect of physical activity on coronary heart disease: A meta analysis. PhD in Kinesiology, 1989. (C. Dotson)

A meta analysis was performed on 138 training studies (1960-1985) to ascertain the relationship of intensity, duration, frequency, and length of prog of an exercise regimen to change in the dependent variables of SBP, DBP, total chol (TC), high density lipoprotein-C (HDL-C), low density lipoprotein-C (LDL-C), triglyceride (TG), bw (KG), and %bf. Changes in CHD mortality due to reduction in risk factors were assessed by the use of the standardized incidence ratio (SIR) developed by the Pooling Project. A weighted residualized change score (ES) was employed to meas change in the dependent variables. Regression anal of the data revealed that changes in effect size in all but one of the dependent variables were sig related ($p=.05$) to changes in the independent variables. Duration was linearly related to changes in VO_{2max}, TC, LDL-C, TG, and SBP, while frequency was associated with change in %bf, SBP, DBP, LDL-C and VO_{2max}. Changes in SBP, DBP and LDL-C were also functionally related to the length of a training prog. Intensity as meas by METS contributed to changes in SBP, HDL-C and VO_{2max}. The only dependent variable failing to show a relationship to change in the independent variables was bw. Projected reductions in CHD mortality associated with an exercise prog were computed from the SIR. Changes in relative risk of CHD mortality were calculated for SBP, DBP and TC. Changes in the SIR were dependent on the initial level of the dependent variable involved, therefore no attempt was made to subject these changes to sig tests. Projected change in relative risk corresponding to the mean changes in SBP, DBP, and TC in this study ranges from a reduction of app 1% for SBP to 12.5% for DBP, with change for TC falling in between these two values. No single quantification variable of training was related to change in all risk factors evaluated in this anal. Therefore, exercise prescription should be formulated according to the individual risk factor to be modified.

207. MUNIZ, A.E. Biomechanical analysis of forces and torques at the support lower extremity during two running-in-place exercises at three paces. PhD in Kinesiology, 1990. (D.L. Kelley)

The purpose of this study was to compare the stress forces (SFs) and torques at the support lower extremity (SLE) between 2 running-in-place (RP) exercises at 3 paces. Also, 2 biomechanical anal procedures were validated for their accuracy in estimating the forces and torques at the SLE. These parameters were estimated by using a 7-link model of the human body with Newtonian equations and either motion anal or simulation procedures. From the motion anal procedures, the vertical estimated foot forces (EFFs) were excellent (ave $r^2=98\%$, RRG=5%), while the anteroposterior EFFs were inadequate representations (ave $r^2<67\%$, RRG>26%) of the ground reaction forces (GRFs). The SFs and torques were estimated with greater accuracy for the joints located closer to the support foot and for those in which the vertical force dominated. Simulation procedures consisted of changing the period in the Fourier series of moderate pace position data to correspond to the slow and fast paces and determine their kinematic parameters. The results obtained from the simulated forces and torques were less accurate than those from the estimated forces and torques. The SFs and torques compared between the exercises were the max values during the support phase and the first .05 sec of landing. A 2 x 3 ANOVA with repeated factors was used to determine if diff existed. All GRFs, compressive forces, the landing proximal shear force at the shank, and the torque at the ankle were larger for RP thigh lift (RPTL) than for RP heel lift (RPHL) (p<.01). As the pace increased toward fast tempo, all max shear forces decreased during both exercises (p<.05). Only during FPTL did the max proximal compressive force at the foot increase and the torque at the knee decrease as pace increased toward fast tempo (p .05). GRF and torque demands for this study ranged between walking and running. The suggestions by Yessis (1984) of "harmful stress" exp on the SLE during RPHL and not during RPTL cannot be supported. During RP exercises, the load on the SLE is of low magnitude; thus, injuries to the SLE musculoskeletal system probably result from a combination of high rep and load bearing on the ball of the foot.

208. REDMOND, R.A. Effects of strength training on muscle mass and musculo-skeletal injury in middle aged and older men. PhD in Kinesiology, 1991. (B. Hurley)

The purpose of this investigation was to assess the effects of strength training on strength, muscle cross sectional area and injury in middle aged and older men. 22 sedentary M Ss between the ages of 50 and 69 yrs volunteered to either a training (N=15) or control (N=7) gp. The training gp participated in a strength training prog 3 times per wk for 4 mos. A 44% increase in total body strength (538 ± 94 vs 773 ± 112 kg, $P<0.01$) was achieved when 4 upper body and 2 lower body strength meas were combined. There was a 7% increase (142 ± 22 vs 153 ± 21 cm^2, $P<0.001$) in mid thigh muscle area and a 9% reduction (64 ± 27 vs 58 ± 25 cm^2, $P<0.05$) in mid thigh subcutaneous fat as meas by magnetic resonance imaging. After training there was 87% less of a rise in serum creatine kinase levels than before training (CK) 8 hrs after an acute exercise bout at the same absolute workload (278 ± 175 vs 148 ± 65 IU/L, $P<0.01$), a 105% decrease in the rise at 24 hrs (261 ± 139 vs 127 ± 74 IU/L, $P<0.01$ and a 71% decreased rise at 48 hrs (183 ± 76 vs 107 ± 50 IU/L, $P<0.01$). The rise in CK levels diminished by 58% 8 hrs after an acute exercise bout at the same relative workload (278 ± 175 vs 175 ± 82 IU/L, $P<0.05$), by 71% at 24 hrs (261 ± 139 vs 152 ± 73 IU/L, $P<0.01$) and by 64% at 48 hrs (183 ± 76 vs 111 ± 51 IU/L, $P<0.0001$). Muscle soreness was rated at these same time points. However, symptoms of soreness were only occasionally reported. Therefore, no anal of these data were made. These results indicate that older men can safely participate in a strength training prog intense enough to promote a substantial increase in strength and muscle hypertrophy. Furthermore, a strength training prog will allow older men to exercise at the same absolute or same relative workload after training with a reduced risk of disrupting musculoskeletal tissue.

209. SALITSKY, P.B. The effects of visual training on performance of a motor skill. MA in Kinesiology, 1990. (E.Y. Brown)

A visual enhancement training prog utilizing the AcuVision 1000™ Visual trainer was evaluated for its effect on the performance of motor skills, total response time (TRT), RT, vertical and horizontal peripheral vision. The purpose of this study was to investigate if incorporating visual training techniques while practicing motor skills will enhance performance. 19 M and F coll students (exp) enrolled in an intermediate VB class practiced visual training for 15 min 3days per wk for 5 wks, while 21 students (control) enrolled in a similar class taught by the same instructor received identical instruction but no visual training. Visual training skills included visual perimetry and hand-eye coordination employing the AcuVision 1000™ Optometric Visual Trainer. All Ss (N=40) were initially screened for visual defects on a Bernell Brewster stereoscope and pre and post tested on the Lafayette Reaction/Movement Timer, Bernell Arc Perimeter (horizontal and vertical peripheral vision), and AAHPERD's 3 basic VB skills tests (serve, forearm pass, overhead pass). RT, peripheral acuity and VB skills tests were statistically anal employing a univariate anal within a general linear model procedure. Anal of the data revealed no sig main diff for both gps. However, within Ss anal revealed sig main effects pre-post. The findings of this study fail to provide evidence for the concept of a visual enhancement training prog affecting the performance of a sport skill.

210. SCHAFFNER-LINDLE, R. The effects of locomotor skipping on aerobic capacity and injury rate in college age women: A comparison with jogging. MA in Kinesiology, 1989. (B.F. Hurley)

This study compared the effects of a locomotor skipping training prog to a jogging prog of similar frequency, intensity, duration, and length of training with regard to VO_{2max}, body comp, and type, frequency and severity of injury incurred. The jogging gp was used as a reference control. 30 untrained ($V0_{2max}$ ≤ 40 $ml.Kg^{-1}.min^{-1}$) F volunteers between the ages of 18 and 30 participated in the study. Exp Ss (n=23) were randomly assigned to either the skipping or the jogging gp. The remaining Ss (n=7) served as inactive controls. Exp Ss attended supervised training sessions 3 days per wk for 8 wks. The training intensity was 70-80% of HRmax. The duration of the training sessions was progressive and increased in length from 12 to 30 min over the 8 wk training period. Daily records were kept of any injury that the participant felt was attributable to the training prog. Injuries were recorded by type, frequency, and severity. Severeness of injury was ranked by the level of disability produced. VO_{2max} was meas during a continuous treadmill test before and after the training period. %bf was also meas pre and post training via hydrostatic weighing. To evaluate the effects of the training prog on cardiorespiratory responses and body comp a two-way ANOVA with repeated meas on one factor was applied to VO_{2max}, %bf, and lean body mass. Both the joggers and the skippers showed sig improvement ($p<0.05$) on the VO_{2max} test (10% and 8% respectively). Although the jogging gp showed slightly greater improvement there was no sig diff between the two training gps. There was also a sig decrease ($p<0.05$) for both gps in %bf (7% for both gps). Joggers sustained 50% more injuries than the skippers. Sites of sig diff included the shin and the knee. The only site that produced greater injuries in the skippers was the feet, mainly blisters. The results of this investigation indicate that for untrained coll-aged F skipping can be used as an alternative aerobic training modality, which when implemented in an 8-wk training prog following ACSM guidelines for frequency, intensity, and duration, can result in: sig increases in aerobic capacity, comparable to that of jogging; sig decreases in %bf; and reduction in frequency of musculoskeletal soreness and/or injury, particularly to the knee and the shin.

211. SCHLABACH, G.A. The effects of training and detraining on corticosterone rhythms and dietary fat selection in the Osborne-Mendel rat. PhD in Kinesiology, 1991. (D.L. Santa Maria)

The central focus of this study was to examine the effects of 6 wks of treadmill running and 2 wks of detraining on corticosterone rhythms and dietary fat intake in the Osborne-Mendel rat. 32 rats were divided into an exp gp and control gp. During training and detraining the animals were given the opportunity to self select their own diet. Bw and food intake (carbohydrate, protein, and fat) were meas daily. At the end of the 6th and 8th wk corticosterone rhythms and citrate synthase were anal. Exercise training had no effect on absolute or relative carbohydrate and protein food intake. However, exercise training resulted in sig elevated fat intake (grams) in the exp gp during the course of the 6 wk training prog. Also, the exp gp consumed more total calories than the sedentary controls and at the end of the 6 wk training prog were considerably heavier in bw. The exercise training prog had a notable effect on the pattern of the 24 hr corticosterone rhythm. The exp gp exhibited a 12 hr elevated plateau which resulted in higher corticosterone production levels at the end of the 6th wk. An important finding of this study was the sig correlation (r=.715) obtained between 24 hr corticosterone production level and 24 hr fat intake (grams) at the end of the 6th wk. Citrate synthase, which has been reported as a marker of fitness in the rat, was not affected by exercise training. During detraining, the exp animals consumed sig more calories and were considerably heavier than the sedentary controls. By the end of the 8th wk, the corticosterone rhythm in the formerly exercised rats apprixumated the normal rhythms of the sedentary controls. Consequently, there was no diff in corticosterone rhythm between the gps.

212. SCHULIEN, C.M. The relationship between lactate threshold, ventilatory threshold, and heart rate threshold in children. MA in Kinesiology, 1991. (P. Vaccaro)

The purpose of this study was to examine the interrelationships between lactate threshold (LT), ventilatory threshold (VT), and HR threshold (HRT) in children to determine if HRT can be used to identify VT and LT. 15 M children 10-14 yrs of age served as Ss. Laboratory testing consisted of an incremental exercise test performed on a motor driven treadmill, designed to determine VT, LT, and HRT. A randomized 3-way ANOVA was used to anal whether the time or VO_2 at which ventilatory, lactate, and HR thresholds occurred were sig diff. A Pearson product moment coefficient of correlation was also applied to determine the degree of relationship between the time and VO_2 at LT, VT, and HRT. Results show that there were no sig diff between the time and VO_2 at which HRT, LT, and VT were determined (p>.05). Correlational anal revealed sig r between the time at which LT occurred and that at which VT occurred (r=.82), the time that

LT occurred and that at which HRT occurred (r=.67), and the time at which VT occurred and that at which HRT occurred (r=.64). The r for the relative VO_2 at which LT, VT, and HRT occurred were also sig, VO_2 at LT and VO_2 at VT (r=.94), $V0_2$ at LT and VO_2 at HRT (r=.95), VO_2 at VT and VO_2 at HRT (r=.93). On the basis of these data, it appears that HRT can be used as a means of estimating both VT and LT.

213. SMUTOK, M.A. Effects of strength training on glucose tolerance and insulin sensitivity: A comparison to aerobic exercise training. PhD in Kinesiology, 1989. (B. Hurley)

To determine whether strength training can induce favorable alterations in glucose regulation, 37 untrained M with high risk profiles for CHD (age=50±10 yrs; M±SD) were studied before and after completion of 20 wks of either a circuit wt training prog (N=14), a treadmill walk/jog prog (N=13), or no exercise prog (N=10). The walk/jog gp was used as reference controls and the no exercise gp was used to control for methodological variation. Plasma concentrations of glucose and insulin were meas after a 12-14 hr fast and during a standard oral glucose tolerance test (OGTT) before and app 19 hrs after training. MANOVA was used prior to univariate anal and planned comparisons were made to determine the effects of each training modality and whether training-induced changes between strength and aerobic exercise training diff. In contrast to aerobic exercise training, strength training had no sig effect on VO_{2max} or body comp. However, strength training produced sig reductions in total plasma glucose area ($mg.dl^{-1}.120 min^{-1}$) under the OGTT curve (20879±6092 vs 18806±6043, $P<0.05$) and in plasma glucose levels ($mg.dL^{-1}$) at 60 min (202+57 vs 178±64, $P\leq0.05$), 90 min (189±75 vs 164±71, $P<0.05$), and 120 min (170±75 vs 150±74, $P<0.05$) after glucose ingestion. Strength training also lowered the total plasma insulin area ($\mu.ml^{-1}.120\ min^{-1}$) under the OGTT curve (8648±3428 vs 6842±1910, ($P<0.05$) and plasma insulin levels ($\mu.ml^{-1}$) during fasting (15±11 vs 12±7, $P<0.05$) and at 90 min (84±45 vs 60±20, $P<0.01$) and 120 min (91±47 vs 57±29, $P<0.01$) after glucose ingestion. There were no sig diff in OGTT results between strength and aerobic exercise training and no changes were observed in the no exercise gp. Results indicate that strength training may improve glucose tolerance and increase insulin sensitivity to the same extent as aerobic exercise training in M at risk for CHD, independently of changes in aerobic capacity or body comp. These findings suggest that strength training may reduce risk for CHD by improving glucose regulation.

214. STEIN, S.H. Phasic alterations in vagal tone at the initiation and termination of progressive aerobic exercise in endurance trained and non-trained individuals. MA in Kinesiology, 1990. (B. Hatfield, L. Santa Maria)

Diff in vagal tone between non-trained (n=6) and endurance trained (n=6) coll-aged M at the initiation and termination of aerobic exercise were examined. Ss completed an activity history form and a test of aerobic capacity for classification as endurance trained (ET) and nontrained (NT). At the initiation of exercise vagal tone was anal during the last 2 min of walking (3.5 mph; 6% grade) through the first 2 min of running (6 mph; 6% grade), and at the termination of exercise vagal tone was anal during the last 2 min of the final run (a speed which elicited 95% of the individual's VO_{2max}; 6% grade) through the first 2 min of recovery walking (3.5 mph; 0% grade). ECG was monitored continuously and recorded for subsequent off-line anal of the heart period. The data were subjected to a 2 x 2 x 4 (Gp x Workload x Interval) ANOVA with repeated meas on the last 2 factors. This design was used for phase I, the initiation of exercise, and again, separately, for phase II, the termination of exercise. Intervals referred to the 2 min work periods which were divided into four 30 sec periods. Alpha was set at .05. At the initiation of exercise ANOVA for V showed sig main effects for gp and workload. ET Ss exhibited a greater degree of vagal tone, and vagal tone was observed to be greater during walking. No sig interactions were revealed. At the termination of exercise sig main effects for gp and workload were observed. ET Ss exhibited a greater degree of vagal tone, and vagal tone was observed to be greater during walking. No sig interactions were revealed. Results indicated that endurance trained and nontrained individuals exhibit similar phasic alterations in vagal tone at the initiation and termination of aerobic exercise. Although nonsig, endurance trained individuals demonstrated an initial rapid return in V during the first 30 sec of recovery relative to the nontrained.

UNIVERSITY OF MIAMI **(ARLETTE PERRY)**
MIAMI, FLORIDA

215. LOWENSTEYN, I. Differences in peak blood lactate values in long course versus short course swimming. MS in Exercise Science, 1991, 38 pp. (A. Perry)

This study examined diff in peak blood lactate levels following a 200m freestyle swim in a 50m long course (LC) and a 25 yd short course (SC) pool. 20 M and F coll swimmers, 18 to 23 yrs old, were randomly assigned to 2 gps. Gp 1 performed a 200m freestyle swim in a SC pool, followed by a 200m freestyle swim in a LC pool. 2 days later the second gp swam the same distance except in the reverse order. Performance time (PT), pre and post-exercise values for HR and blood lactate (LAC) were obtained for each 200m swim. Ss were instructed to perform an all out effort for each swim test with max HR used to determine work intensity. Post-exercise LAC was meas after 3, 5, and 8 min of passive recovery (Analox Lactate Analyser). The highest LAC value obtained was considered peak LAC. To account for diff in pre-exercise LAC values, the change in LAC was used, Δ LAC (post LAC - pre LAC). Paired T-tests revealed that Δ LAC was sig higher ($p<.001$) in the LC pool (10.76mM/L) than the SC pool (9.27mM/L), with no sig effect observed for the order of swim performance. There were no sig diff in post-exercise HR and PT when using a standard conversion factor for the shorter pool. These data suggest that when swimming in diff pool lengths at comparable intensities and distances, the long course pool will produce higher post-exercise lactate levels. It is therefore concluded that pool length must be taken into consideration when using lactate levels to determine optimal training intensities.

UNIVERSITY OF MISSISSIPPI (D. CHEEK)
OXFORD, MISSISSIPPI

216. CLEMONS, J.M. The cardiorespiratory and hemodynamic effects of a single, oral dose of 60 mg Sudafed®. PhD in Physical Education, 1991, 106 pp. (E.R. Anderson)

The CV effects of Sudafed® were evaluated at the recommended dose of 60 mg, in 20 normal, healthy M volunteers at rest, during max treadmill exercise (Bruce Protocol), and following an 8 min seated recovery (2 min walking and 6 min seated). Ss were¡ randomly assigned to either a placebo or Sudafed® gp under double blind conditions, tested, crossed over, and then retested. All data were anal using a one tailed, paired t test ($p \leq 0.05$), except for peak exercise RPE, which were anal using a two tailed t test. No sig diff were found between the placebo and Sudafed* conditions at rest or during max exercise on HR, VO2max, total exercise time (TET), BP, or RPE; however, diff relative to max HR ($p = 0.0599$) and TET ($p = 0.0545$) moved toward sig. Following the 8 min recovery period, HR and SBP were sig lower in the placebo condition when compared to Sudafed® (i.e., $p = 0.0054$ and $p = 0.0027$, respectively). No sig diff was found relative to DBP recovery. Conclusions were that at 8 min post exercise, a 60 mg oral dose of Sudafed® resulted in sig higher HR and SBP. Although statistical conclusions required that the null hypothesis for each exercise dependent variable be accepted, additional studies are recommended to confirm the findings.

217. DELASHMIT, S.J. The effects of game stress situations on the heart rates of selected high school football coaches. PhD in Physical Education, 1991. (E.R. Anderson)

The purpose of this study was to determine the effects of game stress situations on the HR of selected HS football coaches and to determine if those coaches are accurate in recognizing those stress situations. This two phase study utilized 8 coaches from northern MS. Phase I required the Ss to participate in a 1-day testing session to gain max physiological HR and ave resting HR to be used in comparison with data gained in Phase II. Coaches wore 24 hr holter monitors while coaching a home game and an away game. These monitors record heart beats which are easily anal with a specialized computer prog. Games were videotaped with a camcorder that had "on-screen" time display. Play-by-play anal was paired, by time, with HR recorded during the game. Coaches completed a questionnaire choosing the greatest stress situation during the game. This situation was also matched, by time, to the anal recording to obtain the HR during that time. Means, diff, and percentages were calculated from the raw data collected and placed in tabular form. T-tests for independent samples or correlated samples were run to test for levels of sig of the five stated hypotheses. Within the limits of this study, the following results were obtained: (1) Sig diff ($p>.05$) were found in the M resting HR and the M game HR of the coaches and the max game HR and the perceived peak stress situation HR of the coaches. (2) No diff were found in the M game HR of the head coaches and the assistant coaches. Also, no diff were found in the max HR of the exp coaches and the "rookie" coaches. (3) There was no sig diff found in the max physiological HR and the max game HR. It was concluded that coaches are indeed under stress while coaching but are not accurate in determining what is stressful to their hearts.

218. WHITTLE, R.C. The effects of dehydration and temperature on movement and reaction time in college age males. PhD in Physical Education, 1991. (E.R. Anderson)

This study eliminated exercise fatigue in looking specifically at the effects of varied levels of hydration on MT and RT. 25 M classroom volunteers from the Univ of MS participated in a single gp design using repeated meas. The pretest consisted of testing MT and RT while Ss were normally hydrated and at normal mean skin temp. Hand and foot MT and RT were recorded using the ave of 5 trials. Exp data were obtained by testing Ss at elevated and normal skin temp following bouts in the sauna which produced 2-3% and 4-5% dehydration, respectively. Dehydration was monitored using the Bioelectrical Impedance Analyzer and a doctor's scale. One-way ANOVA with repeated meas was used to determine sig between MT and RT at diff levels of hydration. When sig was found, multiple t-tests for paired samples were used to determine the specific location of such diff. Results indicated sig diff for hand RT, hand MT, and foot MT. No diff were found for foot RT for any of the comparisons. These results seemed to follow a pattern which pointed to decreased RT or MT at normal body temp when the dehydration level was the same. While not the case for every comparison, higher levels of dehydration also followed a pattern which frequently resulted in decreased times when the temp was the same.

UNIVERSITY OF MISSOURI (J. ROBERTS)
COLUMBIA, MISSOURI

219. CHANDLER, J.P. The effects of an educational treatment on match between mothers' beliefs and the behavior of their developmentally delayed preschool children. PhD in Physical Education, 1990, 175 pp. (J. Roberts)

The problem was to ascertain the effects of a specific educ treatment delivered to mothers on the discrepancies in match between mothers' beliefs and the behaviors displayed by their mildly developmentally delayed preschool children. 20 mother-child dyads completed the pretest and posttest admin of the Developmental Diagnosis Test as well as admin of the treatments. Each mother-child dyad was randomly assigned to an exp gp or a control gp. Mothers and their children received treatments simultaneously: mothers either an educ treatment or a neutral treatment, and all children a low-structured play intervention. Changes from mismatch between mothers' beliefs and their children's behavior at pretest to match or agreement at posttest, it was hypothesized, would reflect the effect of the treatment mothers received. ANOVAs were used to anal the data and 6 separate hypotheses were tested with sig change in match being realized in 2 of the 6 tests. Exp gp dyads increased in agreement to a statistically sig ($p < .05$) greater degree than control gp dyads. When responses were isolated to type of behavior, sig change in agreement was realized in the motor behavior responses. Neither behavior of child-subjects nor beliefs of mothers, when considered separately, changed sig.

220. CROWDER, T.A. The effects of various exercise modalities on serum cholesterol and triglyceride concentrations. PhD in Physical Education, 1989, 211 pp. (J. Roberts)

The problem was to determine the effects of diff exercise modalities on lipid concentrations of adults enrolled in a corporate fitness exercise prog. Auxiliary purposes were to assess effects of muscle mass utilized, compare aerobic and anaerobic exercise, and compare wt bearing and nonweight bearing aerobic exercises. The 5 exp treatments included bicycling arms/legs, bicycling legs only, machine rowing, treadmill walking/jogging, and wt training. 76 M and F Ss exercised 20-29 min 3 times weekly for 10 wks. Data were included only from Ss who attended at least 80% of the exercise sessions. When exp gps were compared to control Ss none of the research hypotheses were supported. It was concluded that corporate exercise prog utilizing the 5 exercise modalities and engaged in at the frequency, duration, and intensity levels employed in this study should not be expected to sig affect serum lipoprotein or triglyceride concentrations. No relationship appears to exist between the amount of muscle mass exercised and an HDL-C training response. Further, aerobic activities and aerobic wt bearing exercise do not appear to provide any greater effect on HDL-C concentrations than anaerobic activities or aerobic nonweight bearing exercise respectively.

221. GROVE, C.A. The effects of high impact exercise versus low impact exercise on bone density in postmenopausal women. PhD in Physical Education, 1990, 289 pp. (B. Londeree)

The problem was to determine the effect of high impact and low impact activities on bone mineral density in healthy, sedentary, early postmenopausal women. Volunteers were screened to rule out any disease or condition which could affect calcium metabolism. Ss were assigned semirandomly to 3 gps: a control nonexercise gp, a low impact exercise gp, and a high impact exercise gp. The exercises used were selected via a preliminary study using a force platform. Activities producing peak forces less than or equal to 1.5 times the bw were considered low impact while activities producing peak forces greater than 2.0 times bw were considered high impact. The Ss exercised under supervision for 1 hr, 3 times per wk, for 1 yr. Ss were tested 3 times during the yr on the dependent variables: bone mineral density, bone mineral content, estimated Vo2max, HR, and body comp. Data were anal with a mixed 3-way MANOVA with repeated meas. Results showed that 20 min of either a low impact or high impact exercise prog was effective in maintaining bone mineral density. The control gp lost bone mass. It was concluded that exercise of either impact level will prevent bone mineral loss in postmenopausal women.

222. KOLKHORST, F.W. The effects of exercise mode on postexercise oxygen consumption, urinary nitrogen, and fat utilization. PhD in Physical Education, 1990, 161 pp. (B. Londeree)

Eccentric exercise has been observed to cause greater muscle damage than concentric exercise. Signs of subsequent muscle repair have been reported to appear app 3 days after exercise. Moreover, a correlation between resting metabolic rate (RMR) and protein synthesis has been reported in studies of traumatized patients. Thus, recovery energy expenditure from jogging, which included an eccentric component, was hypothesized to be greater and last longer than from concentric cycling due to repair of exercise induced muscle damage. 9 M volunteered to participate in both a jogging and cycling exercise protocol in which resting VO2 and RER meas were taken on 2 mornings prior to and 7 mornings following 3 consecutive days of 45 min of exercise at 60% of VO2max. Total energy and fat energy expenditures were calculated from the VO2 and RER values. Daily protein intake and urinary N output were meas throughout both protocols. No diff were observed in VO2 and RER between preexercise and any of the recovery days following the last exercise bout. Urinary N and estimated N balance did not change from preexercise values over time or mode x time. However, muscular soreness was greater ($p < .05$) and lasted longer in the jogging protocol and overall estimated N balance in the jogging protocol was less pos than the cycling protocol.

223. LINSENBARDT, S. The effect of breathing technique on blood pressure response to weight lifting. MA in Physical Education, 1989, 77 pp. (T. Thomas)

The problem was to determine the effect of various breathing techniques on BP response to dynamic resistance exercise. 20 novice trained M ages 18 to 36 served as Ss. Each S performed 3 sets of a double knee extension and a one arm curl while coupling a diff breathing technique with the concentric phase. The breathing techniques were inhalation, exhalation, and Valsalva. An E and M Physiograph was used to record BP and HR. Results of the statistical anal were considered sig at the .05 level. A sig diff was seen in SBP and DBP between the inhalation treatment and Valsalva. During the one arm curl, HR was sig lower during the exhalation treatment than during inhalation. Results of this study indicate that breathing technique can affect intrathoracic pressure enough that the BP and HR response to the lift is altered.

224. MITTELSTADT, S.W. The relationship between skeletal muscle blood flow and blood lactate concentrations during exercise in rats. PhD in Physical Education, 1990, 165 pp. (B. Londeree)

The purpose of these exp was to determine if there was a relationship between blood lactate concentrations and skeletal muscle blood flow (BF) during exercise. Muscle blood flows in 31 skeletal muscles were meas using the radiolabeled microsphere technique. Glycogen depletion was anal in the soleus and vastus lateralis after exercise. M Sprague-Dawley rats walked or ran at speeds from 15 to 37 m/min to produce a range of blood lactate concentrations. The rats were divided into 4 gps (independent variable for ANOVA) depending on speed or the diff between their resting and exercise blood lactate concentrations. During exercise with low concentrations of blood lactate (gp 1), BF was greatest to muscles with high percentages of SO and FOG muscle fibers. As the diff between resting and exercise blood lactate concentrations increased BF to all muscles tended to be higher. Muscles with the highest percentage of FG fibers had the greatest percentage increase in blood flow. There was a sig correlation ($r = .71$) between glycogen depletion of the FG muscle fibers and blood lactate concentrations. The data demonstrated that increased blood lactate concentrations during exercise may be related to increased blood flow to exercising muscle, especially those with high FG fiber populations.

225. SMITH, D.A. Perceptual estimation and production of exercise intensity using the Borg Category-Ratio Scale. MS in Physiology, 1989, 130 pp. (B. Londeree)

The problem was to examine the relationship of RPE to blood lactic acid (HLa) accumulation using the Borg Category-Ratio (CR10) Scale and to evaluate the potential for subjective regulation of training intensities using the same scale. Ss were 20 M volunteers between the ages of 18 and 36 yrs. Each S was tested to determine RPE, HLa, HR, and running speed (SP) during 10-min, constant workload treadmill runs and 10 min, self regulated, indoor track running. Treadmill runs were performed to elicit RPEs at the aerobic threshold and the anaarobic threshold. Then Ss were asked to reproduce an appropriate running intensity on an indoor track using only the perceptual sensations associated with the corresponding treadmill run. Pearson product-moment correlations revealed a pos relationship between RPE and HLa (r = .56). ANOVA was performed to compare RPEs at the aerobic and anaerobic thresholds during treadmill runs. The RPE was sig greater at the anaerobic threshold (p<.001). MANOVA was used to assess the ability of an individual to reproduce a specific physiological response using RPE. Sig diff (p<.05) were found for all variables except HR at the aerobic threshold. The results of this study support the hypothesis that individuals can recognize diff between the aerobic and anaerobic thresholds using the Borg CR10 Scale.

226. WHITE, C. The inservice needs of South Carolina public school physical educators providing instruction to handicappedstudents. EdD in Physical Education, 1989, 156 pp. (J. Roberts)

The problem was to determine the perceived inservice needs of PE teachers in SC who teach students with handicapping conditions and to examine the efforts of public school districts to meet those needs. A questionnaire was mailed to all PE teachers in SC and a separate survey was sent to each public school superintendent in the state. The return rate from teachers was 35% and from superintendents was 64%. The results of chi-square anal indicated few statistically sig diff among various subgroups of teachers; yrs of teaching exp, grade level taught, or income level of the county. The data indicated that the highest priority inservice need of the teachers was curr materials, followed by information on individualizing instruction, modifying equipment and activities, and knowledge of handicapping conditions. Overall, teachers appeared to be minimally involved in the IEP process. The teachers and admin shared similar perceptions of the teachers' inservice needs. The few inservice prog provided closely paralleled perceived needs. The results of the study closely parallel the results of similar studies in other states. The inevitable conclusion is that many PE teachers are not fully prepared to meet the instructional needs of handicapped students nor are enough public school districts providing the teachers with appropriate inservice training.

UNIVERSITY OF NEW MEXICO **(J.A. GUSTAFSON)**
ALBUQUERQUE, NEW MEXICO

227. KIM, C. Perceived motivational factors related to initial participation and persistence in taekwondo. PhD in Physical Education, 1991.

The major purposes of this study were, first, to examine the US Taekwondo Union members' perceived reasons for initial taekwondo participation and their perceived reasons for dropping out of taekwondo, and, second, to investigate the relationship of current USTU members' perceived competence and achievement goal orientations to their continued participation in taekwondo. The subproblems to be investigated were as follows: (1) To determine the relationship of sociodemographic factors (gender, age, and skill level) to diff in USTU members' perceived reasons for initial participation in taekwondo. (2) To determine how diff in current USTU members' perceived competence relate to continued participation in taekwondo among competitors, competition-dropouts, and noncompetitors. (3) To determine how diff in current USTU members' achievement goal orientations related to continued participation in taekwondo among competitors, competition-dropouts, and noncompetitors. (4) To determine the effect of sociodemographic factors (age, gender, skill level) on current USTU members' perceived competence and achievement goal orientations. (5) To determine the diff between selected former and current USTU members' perceived reasons for initial participation in taekwondo. (6) To determine the selected former USTU members' perceived reasons for dropping out of taekwondo. The sample consisted of 491 current USTU members and 101 former USTU members. Of the current USTU members, 368 M and 124 F were chosen by virtue of their answering the Taekwondo Questionnaire (Form A). Of former USTU members, 76 M and 24 F were selected by virtue of their responding to the Taekwondo Questionnaire (Form B). The data were obtained through questionnaires which were modified, sent out, and collected by the researcher. A number of statistical procedures were used to anal the data. Descriptive statistics were used to develop a descriptive profile of the Ss (e.g., gender, age, and educ level), and to identify the reasons for initial participation in and dropping out of taekwondo. SPSSx MANOVA procedures were applied to anal the data related to hypotheses. Finally, the Bonferroni adjustment was used as a post hoc comparison procedure to test the sig of each hypothesis and of unhypothesized statistical findings. The following are the results of the tests of the research hypotheses based upon the statistical treatment of the data within the limitations of the study. (1) M were not more highly motivated by skill dev reasons than F. (2) Younger participants were more highly motivated by achievement/success motivation than older participants. (3) Participants at the basic skill level were not more highly motivated by skill dev reasons than participants at the intermediate and advanced skill levels. (4) Participants at the intermediate skill level were not more highly motivated by skill dev reasons than participants at the advanced skill level. (5) Competitors had a higher perceived competence than competition-dropouts and noncompetitors. (6) Competition-dropouts did not have a higher perceived competence than concompetitors. (7) Competitors tended to score higher on meas of competitiveness than noncompetitors, while competitors did not tend to score higher than noncompetitors on meas of win orientation. (8) Competition-dropouts scored higher than noncompetitors on win orientation. On the other hand, competition-dropouts did not tend to score higher than noncompetitors on meas of competitiveness. (9) Noncompetitors did not tend to score higher than competitors and competition-dropouts on meas of goal orientation. (10) M did not have a higher perceived competence and tend to score higher on meas of win orientation and competitiveness than F. (11) Participants at the advanced skill level did not have a higher perceived competence and tend to score higher on meas of win orientation and goal orientation than participants at the intermediate and basic skill levels. (12) Participants at the intermediate skill level did not have a higher perceived competence and tend to score higher on meas of win orienation and goal orientation than participants at the basic skill level.

UNIVERSITY OF NORTH CAROLINA (F. MEASANCE)
CHAPEL HILL, NORTH CAROLINA

228. BREWER, K.D. The effects of intermittent compression and cold on reducing edema in postacute ankle sprains. MA in Physical Education, 1990. (W. Prentice)

This studycompared the effectiveness of 2 treatments (one using intermittent compression, coolant, and elevation and the other using compression [elastic wrap], ice, and elevation) in reducing postacute ankle sprain edema. Volumetric water displacement meas and 4 anthropometric meas were taken before and after treatments to meas edema. 30 Ss with unilateral ankle sprains exhibiting pitting edema were alternately assigned to the 3 treatment gps. Sig interaction effects were found (p=.0001) for the volumetric meas and for the proximal anthropometric meas (p = .0003). The Tukey HSD anal determined that the Jobst Cryotemp gp sig decreased edema as meas volumetrically and proximally with mean decreases of 13.3 ml and 0.20 cm, respectively. Pearson Product Moment Correlations compared the volumetric meas to the figure-eight meas. These anal rendered extremely high r (0.9 and 1.0). In conclusion, the Jobst Cryotemp is more effective in reducing postacute ankle sprain edema than the elastic wrap with ice, and the volumetric and figure-8 meas techniques are highly correlated.

229. CHERRY, D.L. Descriptive analysis of the economic impact using RIMS on retail bicycle shops in North Carolina. MA in Physical Education, 1989. (R. Hyatt)

The purpose of the study was to assess the economic impact of cycling in the state of NC. The study was conducted through the use of an 8 question survey and cover letter sent to the 98 NC bicycle shop dealers. The response rate was 25.5%. The main objective was to ascertain the total gross revenue of the NC bicycle shops. The mean gross revenue for 1988-1985 was $318,478, $285,000, $270,833, and $252,942 with a range of less than $50,000 to more than $1 million. The economic impact using the Regional Input-Output Modeling System was $20,838,961 for 1987 and $26,270,724 for 1988. The mean dealer age was 9.15 yrs with a gross profit margin of 32.87, 32.32, 31.35, and 31.13% for 1988-85. Actual bicycle customer profile, clubs and associations, and employment and a product profile were also computed for the 4 yr period. These data provide a base of economic and descriptive anal for the cycling industry of NC. Subsequent anal in later yrs can help to further establish the link between sports and business.

230. CODY, S.M. The effects of the strength shoe on vertical jump performance in male collegiate basketball players. MA in Physical Education, 1989. (W.E. Prentice)

The purpose of this study was to determine if max vertical jump performance of male coll JV BB players attending the Univ of NC at Chapel Hill was sig changed through the use of an ergogenic training device, namely the Strength Shoe. The sample included 10 M JV BB players and 2 M graduate students. 6 Ss were randomly assigned to the exp gp and 5 to the control gp. All participated in a 4 wk training regimen with Ss in the exp gp wearing the Strength Shoes during the training sessions, while the controls wore their own BB shoes. A vertical jump pretest was admin prior to training and a posttest following the training to determine the effects of the Strength Shoe on max vertical jump performance. A 2 x 2 ANOVA with repeated meas on the last factor indicated no statistically sig diff in max vertical jump performance between the Ss who trained in the Strength Shoe and those who trained in conventional high top BB shoes.

231. ETNIER, J.L. The effect of environmental color on performance, arousal, affect, and cognition. MA in Physical Education, 1990. (C.J. Hardy)

The purpose of the study was to determine the extent to which environmental color affects performance, arousal, affect, and cognition. 17 F and 13 M who were undergraduates at the Univ of NC at Chapel Hill were used as Ss. Each S performed both a fine-complex and a gross-simple task in a colored room. Each

S performed in 3 diff colored rooms (arousing, calming, and neutral). Results indicated that environmental color does not affect performance, arousal, or cognitions; however, color and meas do interact to impact affect. Pos affect (F(8,232)=10.90, p<0.0001) and desire to cope (F(2,58)=15.07, p<0.0001) were both impacted by the interaction of color and meas. Subgroups of the sample were formed by performing median splits based upon certain categorial variables. Several of the subgroups diff from the overall sample. The low trait anxiety gp diff from the overall sample on peak performance on the Wingate. Results indicated that peak performance was best in the white room (M=17.73, SD=5.06), second in the orange room (M=16.67, SD=3.4), and third in the green room (M=15.93, SD=4.45). The field dependency subgroups and the locus of control subgroups diff from the overall sample on physiological factors and on factors of the ZIPERS.

232. FONTENOT, M.E. The effectiveness of acupressure in the treatment of primary dysmenorrhea. MA in Physical Education, 1989. (W.E. Prentice)

The purpose of this study was to assess the effectiveness of acupressure in the treatment of primary dysmenorrhea. The study evaluated 3 treatment conditions: applying acupressure massage to a known acupressure point (BL 23) versus massaging a placebo point versus applying no massage at all. The short form of the McGill pain questionnaire was used to meas several dimensions of pain immediately before, immediately after, and 2 hrs after treatment. The findings of this study suggest that 4 min of acupressure massage to BL 23 can effectively reduce the pain of primary dysmenorrhea for a least 2 hrs. However, the results also indicated that placebo acupressure is also capable of reducing dysmenorrheic pain for the same amount of time. Additional research is needed to determine if similar results with placebo acupressure are obtainable and to further clarify which specific symptoms of dysmenorrheic pain are best relieved with this type of treatment.

233. HOVIS, O.L. The justification for and feasibility of providing spending money to scholarship athletes. MA in Physical Education, 1989. (F.O. Mueller)

The purpose of this study was to determine the opinions of ADs and football coaches at NCAA Div I-A institutions regarding the justification for and feasibility of giving spending money to student-athletes who receive athletic grants-in-aid, and to determine if diff of opinion exist between coaches and ADs and between those budgets in the red and those in the black. Of the 105 ADs and football coaches given an opportunity to participate in the study, 96 (64%) returned the questionnaire. Results indicated that 71% of the participants agreed that many student-athletes need incidental expense money since their parents cannot provide them with any money. 64% disagreed that athletes deserve to receive money because of the money and prestige they bring to their univ. Football coaches were found to agree more than ADs that athletes should receive incidental expense money. Football coaches were also found to agree that only scholarship athletes who participate on revenue sport teams should receive incidental expense money. Those with budgets in the red were more likely to agree that only those athletes who demonstrate financial need should receive incidental expense money.

234. JACOBSON, B.J. The relationship between sport-confidence, competitive orientation, and performance on a muscular leg-endurance task. MA in Physical Education, 1989. (C.J. Hardy)

This study tested the validity of Vealey's (1986) model of sport-confidence in a competitive muscular leg-endurance task. Ss (20 M and 20 F) competed back to back against someone of the same gender and similar ht/wt ratio in the Carolina Muscular Leg-Endurance Competition. The muscular leg-endurance task required the Ss to extend their dominant leg in a horizontal position for as long a period of time as possible. The Ss were admin the following instruments: Trait Sport-Confidence Inventory (TSCI), State Sport-Confidence Inventory (SSCI), and Competitive Orientation Inventory (COI). In contrast to the proposed model, state sport-confidence was not found to be a sig predictor of performance. Trait sport-confidence was pos related to state sport-confidence while competitive orientation was not. The interaction of competitive orientation and trait sport-confidence was also not sig related to state sport-confidence. The results of this study offer limited support for the predictions made by Vealey's model.

235. MILLER, K.A. The cardiovascular and metabolic responses of men with cardiovascular disease to aqua dynamic exercise. MA in Physical Education, 1990. (R. McMurray)

Since exercise in water has been shown to have a diff physiology from land exercise, the CV effects of aqua dynamic exercise (AD) should be studied especially when prescribing AD for cardiac patients. 8 cardiac patients performed 21 min of submax aqua dynamic exercise which was compared to land treadmill walking (LT) at a similar HR. VO_2, ventilation, and calorie expenditure were similar for both trials ($p = 0.90$). Respiratory quotients were higher for AD ($p = 0.02$) with 5 out of 8 Ss' values ≥ 1.00. All Ss achieved AD lactates higher than 2 mmol which was greater than LT ($p = 0.007$). Overall SBP and DBP did not diff between trials. In conclusion, AD can be prescribed to improve CV fitness in the cardiac patient using a land derived target HR range to indicate intensity.

236. O'MARA, C.M. Validity of techniques for measuring blood cholesterol with the Reflotron. MA in Physical Education, 1990. (R. McMurray)

The purpose of this study was twofold: first, to determine the validity of a portable blood analyzer, the Reflotron, in meas chol levels from whole blood, plasma, serum, and skin-puncture blood; second, to determine what is the most appropriate method for skin-puncturesampling. The sample size consisted of 25 M and 25 F volunteers from the Univ of NC at Chapel Hill comm. Blood samples were obtained from each S via antecubital venipuncture and 3 skin-puncture sites which included the earlobe, fingertip, and warmed fingertip. The results showed no diff in the Reflotron's meas of blood chol levels between the finger and warmed-finger skin-puncture blood sampling techniques and no diff when compared to the standard lab technique of all blood samples with the exception of earlobe skin-puncture blood and venous plasma. Earlobe skin-puncture blood meas chol levels sig higher than the standard lab and finger skin-puncture techniques ($p<0.01$); venous plasma meas sig lower than the standard lab technique ($p<0.05$). In this study, blood samples from a finger — warmed or nonwarmed — appear to be the most appropriate skin-puncture techniques when using the Reflotron to meas total chol levels. The Reflotron was also found to be accurate in meas chol levels in venous whole blood and serum.

237. PARKER, A.R. Parental influence upon the socialization of children into sport. MA in Physical Education, 1989. (J.M. Silva)

Previous research has focused on the child's perception of the socialization process into sport or on the parents' perceptions of the socialization process into sport. This study extended previous research by questioning not only the children but also their parents about the socialization process into sport. The subject sample consisted of 81 children and their parents. Separate questionnaires were dev and admin to each specific gp (fathers, mothers, and children). The findings from this study suggest that parents are involved in the socialization process of their children into sport. The children found this involvement of the parents in the socialization process to be greater than the parents' own perceptions. However, there was general congruency between the children and the parents and between the parents.

238. PEARMAN, S.N., III. Ninety second cycle ergometer tests for assessing anaerobic glycolytic power. MA in Physical Education, 1990. (A.C. Hackney)

The purpose of this study was to determine a resistance setting (RS) for eliciting max power output (PO) responses (mean and peak) during a 90 sec performance test, intending to assess anaerobic glycolytic power (AGP). Ss (N=24) completed a 30 sec Wingate test (WG) and four 90 sec AGP tests at RS of 2%, 6%, 8%, and 10% of bw. Psychophysiological meas (HR, BP, serum lactate, serum cortisol, RPE, and feeling scale) were taken before the tests, immediately after, and at 30 min of recovery. Statistically, the WG and AGP tests produced sig changes (p<.05) in the psychophysiological meas. These results were variable, but did imply the 6% and 8% AGP tests were the most stressful. Polynomial regression anal was performed on all PO responses. This anal indicated that the 2% RS was not sufficient enough, and the 10% RS was too much for optimal AGP results. The 6% and 8% trials appeared comparable; however, regression anal suggested that a 6.5% resistance for 90 sec AGP tests would elicit max PO responses.

239. ROBERTS, N.A. The influence of situation criticality on the performance of male collegiate basketball players. MA in Physical Education, 1989. (J.M. Silva)

The influence of situation criticality on the performance of teams participating in the Atlantic Coast Conference was examined for the 1987-1989 seasons. Team performance in personal fouls and free throw shooting was examined as a function of the following variables: (1) situation criticality, (2) winning versus losing, (3) period of the game, (4) type of game. Regression and a discriminant function anal were computed to determine if performance variation could be predicted by criticality factors. Personal fouls (99.93%) and free throw shooting (.07%) were sig predictors of criticality. ANOVA anal indicated that the no. of personal fouls committed in moderately critical situations was sig (p<.001) less than the no. of personal fouls in high or low critical situations. Personal fouls in the first half were sig (p<.001) less than personal fouls in the second half. The ANOVAs for free throws were all nonsig. The personal foul results suggest player ability to regulate rule violating contact in order to avoid personal fouls at critical points in the game. The free throw results are discussed in relation to the closed nature of the skill and the ability level of coll BB players.

240. SHAW, J.M. Life stress, illness, injury, and performance among professional musicians. MA in Physical Education, 1990. (C.J. Hardy)

The purpose of this study was to examine the relationships among life stress, illness, injury, and performance in professional musicians. Additionally, the effects of gender and coping status were examined as possible moderators of this relationship. 48 orchestral musicians completed the Musicians' Life Experiences Survey (MLES) and the Musicians' Illness, Injury and Performance Survey (MIIPS), to elicit life stress, health, and performance data. The overall base model correlational anal indicated a sig pos r between neg life change (NLC) and the incidence, duration, and severity of injury symptoms. Additionally, NLC was inversely related to feelings toward colleagues and performance career. Pos life change (PLC) was found to be sig related to career satisfaction and individual performance evaluation. The within gps anal for gender, coping status, and their cross product suggests that membership in these various subgroups attenuates the overall stress, health, and performance relationship.

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241. ACEVEDO, E.O. Changes in cognitive appraisals and metabolic indices of physical exertion during a two-hour run. PhD in Physical Education, 1989, 104 pp. (D.L. Gill)

During an endurance run various physiological changes occur in response to the metabolic energy demands of the activity, and the runner makes continuous cognitive appraisals of the exp. The purpose of this investigation was to document the changes and relationships in several metabolic indices and cognitive appraisals that occur throughout a 2 hr run. More specifically, 12 M competitive runners ran on a treadmill at app 70% of their VO2max for 2 hrs. The metabolic indices assessed at specific times during the run were HR, V_E, RQ, La, and Glu. Simultaneously, cognitive appraisals of exertion (RPE, Borg, 1962), expectancies (self-efficacy, Bandura, 1977), and affect (profile of mood states, McNair, Lorr, & Droppleman, 1971) were assessed. Repeated meas ANOVAs revealed sig changes in RQ, V_E, La, Glu, and HR. Also, sig changes were observed in vigor, fatigue, tension, and depression, while confusion and anger did not change. The total score for mood state, referred to as total mood disturbance (TMD) demonstrated a sig change toward a more neg mood state. The other cognitive appraisals of RPE and self-efficacy increased and decreased, respectivly. Pearson correlations among variables at specific times of assessment revealed that as exercise continued beyond 30 min the magnitude of the relationships among cognitive appraisals (self-efficacy, RPE, TMD) increased slightly. Concurrently, relationships among specific appraisals and specific metabolic indices slightly increased. Generally, stronger relationships occurred among cognitive appraisals than between cognitive appraisals and metabolic indices. Step-wise regressions supported the cognitive appraisal-metabolic indices associations.

242. BERNO, K.A. An examination of levels of rider arousal in the three phases of an equestrian combined training event. MSc in Physical Education, 1990, 85 pp. (D. Gould)

This study examined the perceived optimal level of state anxiety/task type relationship. More specifically, this investigation was conducted to directly determine if diff levels of multidimensional state anxiety were perceived to exist for peak performance in the 3 diff phases (dressage, cross country, and stadium jumping) of an equestrian combined training event. State anxiety was viewed retrospectively as a multidimensional construct by employing the Competitive State Anxiety Inventory-2 (Martens et al., 1983). 2 hypotheses were formed about the level of state anxiety. First, retrospectively perceived cognitive state anxiety would not diff across the 3 phases of the equestrian combined training event prior to the rider's best performance(s). Second, somatic state anxiety would be lowest for dressage, medium for stadium jumping, and highest for cross country prior to the competition. Data were collected, using a mailed questionnaire, from 200 equestrians randomly drawn from a national organization. 115 riders returned the survey and the results revealed that their multidimensional state anxiety levels did indeed vary across the 3 phases (cognitive state anxiety, F (2,218)=6.03, p<.003); somatic state anxiety, F(2,204)=9.53, p<.005; self-confidence, F(2,204)=4.28, p<.01). Moreover, because diff levels of state anxiety were perceived to exist, the Landers and Boutcher's (1986) task complexity scale, mailed to 10 experts, was used to verify that task complexity diff for the 3 phases of the combined training event. It was predicted that the Landers and Boutcher task complexity scale would reveal that dressage was the most complex task, while cross country would be the least complex task. Stadium jumping would have a total complexity score falling between these 2 events. The scale failed to differentiate complexity between the tasks (F(2,10)=256.49, p>.360). As a follow-up, the diff between the Ss' self-perceived task complexity ratings of the 3 phases and their perceived optimal levels of multidimensional state anxiety were examined. Results revealed that there was a relationship between perceived task complexity and optimal state anxiety. Findings from this study lend support to the belief that task type and perception of task complexity are important variables in the arousal-performance relationship. It was also suggested that advancements must be made in task characteristic assessment procedure before further advances can be made in the area.

243. BUTT, K.L. Four middle school physical education teachers' experiences during a collaborative action research staff development project. EdD in Physical Education, 1989, 191 pp. (T.J. Martinek)

The purpose of this study was to describe 4 middle school PE teachers' self-reported exp during collaborative action research staff dev projects. Specifically, the research explored (1) the teachers' self-reported perceptions about various aspects of their teaching before, during, and after their involvement with collaborative action research projects, (2) the teachers' self-reported expressions of instructional autonomy and any modifications to that during their participation in collaborative action research projects, (3) the teachers' self-reported opinions of collaborative action research as a vehicle for improving instructional practice, and (4) the results of the teachers' collaborative action research projects. 4

teachers volunteered to participate. 2 were F, 1 black and 1 white, and 2 were M, 1 black and 1 white. The teaching exp ranged from a second-yr teacher to a teacher with 19 yrs teaching exp. 3 data collection methods — interviews, transcribed tapes of workshops and work sessions, and teacher logs — were used. All interviews and workshop and work sessions were transcribed in order to provide an accurate record of all verbal transactions. Participants were given the opportunity to correct and clarify any portion of the transcriptions. In anal the data, the researcher sought to discover themes, patterns, and diff related to various aspects of the teachers' teaching, instructional autonomy, and the teachers' opinions of action research as a vehicle for improving instructional practice among the 4 case reports. The themes that emerged related to the teachers' teaching included: management of class time, individualizing instruction, student learning, teacher self-growth, relationship with students, individualized dev, students enjoying PE, fitness, and teacher communication skills. The themes that emerged related to instructional autonomy included: the teachers' preferred learning style, self-growth, planning, and reflection. The following conclusions were drawn: (1) the teachers all exp an increase in understanding of their instructional practices; (2) all teachers reported being more conscious of their decision making practices; (3) action research was reported by all teachers as a useful vehicle for improving their instruction; (4) an increase in instructional autonomy was exp in varying degrees by all 4 teachers during their participation in collaborative action research projects; (5) 3 teachers were able to change their teaching to varying degrees; and (6) all teachers dev a sense of becoming an agent of their own change.

244. HOLMES, M.L. The analysis of enrollment patterns and student profile characteristics at a small rural New England university 1978-1988. EdD in Physical Education, 1990, 400 pp. (S.M. Robinson)

The purpose of this study in support of a concept of acd planning was to review the overall enrollment patterns and to compare and contrast the profile characteristics of students who completed various formal prog of study at the Univ of ME at Presque Isle for the yrs 1978-1988. A data base was dev by hand searching and reviewing the files of all students who entered the univ as either a degree seeking student or nondegree seeking student between 1978 and 1984 (N = 5115) and who left either successfully or unsuccessfully between 1978 and 1988. 21 variables related to admission to the univ, attendance at the univ, and departure from the univ were identified. The 21 variables became the basis for the dev of the 5 profiles used in anal, interpretation, and discussion of the data. Within each profile the data were grouped to answer these questions: Where did students come from? What were the entering acd characteristics? What were their social characteristics? What were the acd plans of the students? What happened to the students? Ochberg (1986) supported the need for coll students to gain an identity and be able to "fit" into the coll setting comfortably. Tinto's (1986) more recent research focused on the coll exp as a rite of passage. Catalano (1985) reported that at some point in the coll student's career the students must feel that enough of their needs were being met for the student to choose to continue in coll. The data revealed consistent patterns in some variables, peaks and valleys in others, and no trends over time. The profiles suggest the following conclusions: (1) The prog profiles that emerged showed educationally a diverse student population. (2) The data revealed diverse student acd objectives and varied forms of institutional curr response. (3) Compared to the Global Profile the students matriculating in the Educ/HE, PE, Rec Division are not a homogeneous subset.

245. KELLEY, B.C. An examination of a model of burnout in dual-role teacher-coaches. PhD in Physical Education, 1990, 236 pp. (D.L. Gill)

This study dev and tested a model of stress and burnout in dual-role teacher-coaches. Following Smith's (1986) cognitive-affective model of stress and burnout in athletics, this investigation examined: (a) the contribution of the stress appraisal components of perceived stress, coaching issues (teacher-coach stress), and coaching problems (teacher-coach role conflict) to the prediction of burnout (emotional exhaustion, depersonalization, and personal accomplishment), (b) the contribution of environmental/situational variables (social support, gender, and yrs of exp) to the prediction of stress appraisal, and (c) the direct contribution of the environmental/situational variables to the prediction of burnout. The sample of M (n = 99) and F (n = 115) teacher-head BB coaches from NCAA Div III and NAIA coll completed established meas of burnout, perceived stress, and social support, and a meas of coaching stress dev for this study during the month of Feb. Regression anal supported the model, with stress appraisal predicting burnout and environmental/situational variables predicting stress appraisal. More specifically, perceived stress predicted all components of burnout, with coaching issues adding slightly to the prediction of emotional exhaustion and coaching problems to the prediction of depersonalization. Social support satisfaction predicted all 3 stress appraisal components, with gender entering as a predictor for perceived stress and coaching issues. Generally, greater perceived stress led to greater burnout, and greater satisfaction with social support led to less perceived stress. Also, F had slightly higher perceived stress than did M. Contrary to previous studies, these teacher-coaches reported high levels of burnout. Further exploratory anal suggested that coaching issues fit into the model better as an environmental/situational variable than as a stress appraisal meas. Path anal revealed that coaching issues, social support, and gender predicted perceived stress, and perceived stress predicted all components of burnout, having the greatest influence on emotional exhaustion. The results supported the key components of the model, although the modified model provided a better fit for the data. Coaching issues, social support, and gender influenced the teacher-coaches' perception of stress, which, in turn, influenced their levels of burnout.

246. KRANE, V.I. The relationship between anxiety and athletic performance: A test of the multidimensional anxiety and catastrophe theories. PhD in Physical Education, 1990, 322 pp. (D. Gould)

The relationship between anxiety and athletic performance has been a critical area of study in sport psych from both practical and conceptual perspectives. New theories examining this relationship are emerging which need to be examined and compared in order for our understanding of the anxiety-athletic performance relationship to progress (Gould & Krane, in press). The primary purpose of the present study was to examine 2 innovative approaches concerning the relationship between anxiety and athletic performance by comparing predictions based on the multidimensional anxiety theory and catastrophe theory. The multidimensional anxiety theory predicts that cognitive and somatic anxiety will differentially and independently relate to performance while the catastrophe theory is a 3-dimensional model examining the joint effects of cognitive and somatic anxiety. A coll women's soccer team participated as Ss in this study (n = 19). These athletes completed the Competitive State Anxiety Inventory-2 (CSAI-2), which meas cognitive and somatic anxiety, prior to 12 matches of their competitive season. 3 soccer performance meas were obtained: coach, athlete, and objective ratings of performance. Results provided support for the multidimensional anxiety theory prediction that cognitive anxiety would be related to performance in a neg linear manner. Contrary to expectations, somatic anxiety also displayed a neg linear relationship to performance, not the curvilinear relationship found in previous studies (Burton, 1988; Gould et al., 1987). The catastrophe theory anal found isolated indirect support for some catastrophe theory predictions, but not for the entire model. The hypothesis that the combined effect of cognitive and somatic anxiety would account for sig more of the performance variance than cognitive and somatic anxiety independently was not supported. However, data trends were in the desired direction. Nonlinear regression anal of the 3-dimensional catastrophe model accounted for 1-3% of performance variance, less than the linear regression model examining the independent effects of cognitive and somatic anxiety. The biggest strength of the present study was that a methodological and conceptual model for examining catastrophe theory was dev.

247. MROS, M. A description of the causal attributions made to perceived teaching behavior across three elementary physical education contexts. EdD in Physical Education, 1990, 120 pp. (T. Martinek)

The purpose of this study was to investigate student perception and attribution patterns of teacher behavior for high, ave, and low expectancy gps across 3 instructional contexts during ele school PE instruction. The 3 instructional contexts were cooperative, individual, and competitive. Teachers used the Teacher Expectation Inventory to determine student expectancy gps. 2 randomly selected high expectancy, ave expectancy, and low expectancy students from 5 second grade and 6 third grade classrooms composed the student sample for the study. PE classes taught within cooperative, individual, and competitive instructional contexts provided the reference for student reactions to interview questions concerning teacher behavior and attribution of causality. A structured interview was used to collect data from each expectancy gp pertaining to the perception and attribution of teacher behavior across the 3 instructional contexts. Interviews were conducted at the end of each phase. Attributions of perceived teacher behaviors were categorized into one of the 4 outlined categories and reported in percentage of occurrence. Variations in student perception and attribution of teacher behavior were reported in relation to each expectancy gp and instructional context. Student statements were used to augment expectancy and context variations in student perception and attribution of specific teacher behaviors. The expectancy gp appeared to influence both student perception and attribution of teacher behavior. Instructional context, however, appeared to have little influence on student perception and attribution of teacher behavior. Based on the results of this study, the reseacher provided suggestions for future research in the area of teacher expectations.

248. PISSANOS, B.W. Continued professional learning and the experienced elementary school physical education specialist. EdD in Physical Education, 1989, 289 pp. (K.R. Barrett)

An assumption associated with professional practice is that professionals will continue to grow and to learn following their preservice professional educ prog (Houle, 1980). In the PE lit, few studies have addressed this type of professional dev (Locke, 1984). The purpose of this inquiry was to gain insight into the meaning-perceptions of 4 exp ELE school PE specialists concerning the nature of continued professional learning. Information regarding the specialists' meaning-perceptions was obtained in a series of 3 in-depth open-ended semi-structured interviews with each specialist. All interviews were audiotaped, transcribed, and studied. Inductive anal (Guba & Lincoln, 1981; Lincoln & Guba, 1985) and the constant comparative method (Glaser & Strauss, 1967; Lincoln & Guba, 1985) were employed to interpret the data, or 4 "stories," collectively. Utilizing a "constructed knowledge" (Belensky, Clinchy, Goldberger, & Taule, 1986) way of knowing, insight was gained into the specialists' meaning-perceptions concerning the nature of continued professional learning. 2 themes were identified: (1) Continued professional learning was defined as a broad concept. (2) The value of continued professional learning was perceived as directly related to motivational and commitment levels of the individuals involved.

249. ROBERTS, E.L. Teachers' beliefs about purposes as reflected in teaching practices: A study in elementary school physical education. EdD in Physical Education, 1990, 316 pp. (K.R. Barrett)

The focus of this study was to discover how beliefs about the purposes of ele school PE were reflected in teaching practices. Specifically, the study sought to determine what teachers believed to be the primary purposes of their teaching and further to determine the ways and extent to which those purposes were reflected in the teachers' selection of content and interactive teaching behaviors. The theoretical base for the study is the body of research on teacher thinking, especially the relationship between thoughts and actions as conceptualized in the model by Clark and Peterson (1986). The interpretive research paradigm was selected as the framework for the methodology. Participants were 5 exp ele school PE specialists. All were observed teaching, had selected lessons audiotaped, and participated in both informal and semistructured interviews. The teachers' beliefs about the purposes of ele school PE reflected some common thinking yet remained highly individualized. Teachers named from 2 to 4 primary purposes but had difficulty in identifying both the purposes of their teaching and the means by which they sought to achieve those purposes. The 5 teachers identified 15 purposes for their teaching. They were consistent in practicing 7 of these, inconsistent in practicing 5, and 3 were placed into a questionable category. No teacher was able to carry out practices that were consistent with all of her purposes. Diff between more consistent and less consistent teachers were identified, with the more consistent teachers characterized by their ability (a) to identify a greater no. of means and more relevant means for achieving their purposes, (b) to be more verbal both during the interviewing process and during instruction, (c) to display greater interest in continued study, and (d) to use less formal class structures.

250. TODD, M.K. Effect of age and thirty minutes of exercise on prostacyclin/thromboxane A2 ratios and circulating concentrations of prostacyclin and thromboxane A2. PhD in Physical Education, 1990, 121 pp. (A.H. Goldfarb)

The effect 30 min of treadmill exercise on prostacyclin/thromboxane A2 (PGI2/TXA2) ratios, plasma PGI2 and TXA2 in young and older men, 27.8 ± 0.8 and 55.4 ± 1.3 yrs old, respectively, was determined. Exercise intensity was maintained at 70-75% of VO_{2max}. Venipuncture samples were taken at rest, immediately after exercise, and at 30 min recovery. Total chol (TC), high density lipoprotein (HDL), and low density lipoprotein (LDL) were determined from a serum sample taken at rest. Plasma 6-keto-prostaglandin F1* and TXB2 (i.e., stable metabolites of PGI2 and TXA2, respectively) were determined by radioimmunoassay. Plasma PGI2 and TXA2 were corrected for hemoconcentration; TXA2 was corrected for platelet count. Linoleic acid (LLA) intake and polyunsaturated/saturated fat ratios (P/S ratios) were estimated by 4-day diet records. Repeated meas ANOVA indicated that there was a sig main effect for age on PGI2/TXA2 ratios and TXA2 concentrations. Resting PGI2/TXA2 ratios were 7.4 ± 1.4 for the young men and 5.9 ± 1.0 for the older men; the ratios were not sig diff. Immediate post exercise ratios changed 25.4% and 10.3% for the young and older men, respectively. The diff was not sig. 30 min after exercise PGI2/TXA2 ratios for the older men were 37.5% below resting levels, compared to an 8.2% decline for the young men. There was an 85.2% diff between gp ratios 30 min after exercise; the diff was not sig. Ratio changes for the older men 30 min after exercise were marked by a 28.7% increase in TXA2 above resting values. Separately adding TC, HDL, LDL, LLA, and P/S ratios as covariates did not alter the anal. These data suggest that older men may exp declines in PGI2/TXA2 below resting values 30 min following exercise at 70-75% of VO$_{2max}$. Thus, older men, when compared to younger men, may be more predisposed to platelet aggregation 30 min after exercise.

UNIVERSITY OF OREGON (L.R. OSTERNIG)
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251. BECK, B.R. An investigation of anatomical structures associated with the site of medial tibial stress syndrome, often referred to as "shin splints." MSc in Physical Education, 1991. (L.R. Osternig)

There is controversy in the lit regarding anatomical structures which contribute to Medial Tibial Stress Syndrome (MTSS), and a lack of accuracy in some reports of musculature associated with this pathology. 50 cadavers were dissected and the attachments of the soleus, flexor digitorum longus (FDL), and tibialis posterior (TP) muscles, and the deep crural fascia (DCF) were meas. The soleus and FDL muscles and the DCF were found to be the structures most frequently attached at the site of MTSS. TP was not found to attach at or near the site of MTSS. Results support lit evidence that the soleus and DCF are most likely to be responsible for MTSS.

252. BENNETT, S.R.C. Citric acid cycle flux rates and mitochondrial marker enzymes: Endurance training effect. PhD in Physical Education, 1991. (G. Klug)

There is persuasive evidence that the metabolic changes in skeletal muscle resulting from endurance training are associated with increases in both mitochondrial protein and the potential for energy production via oxidative metabolism. The increase in mitochondrial volume density tends to parallel the enzymatic activity of the Krebs cycle, an observation that led to the notion that citrate synthase (CS) and succinate dehydrogenase (SDH) may be used as marker enzymes for evaluation of cycle flux rates. However, conflicting evidence exists concerning this assumption and there is still disagreement as to whether correlations that potentially exist in untrained Ss will remain in the trained state. The purpose of this study was to examine the relationship between the activity of putative Krebs cycle marker enzymes and flux rates in skeletal muscle from trained and untrained rats. In contrast to previous reports where VO_2 was used to estimate flux rates, these exp directly meas the oxidation of [^{14}C] labelled Krebs cycle substrates. Two additional mitochondrial enzymes, hydroxyacyl CoA dehydrogenase (HAD) and ketoacid (CoA transferase (KCT), were correlated with flux rates to assess whether exercise induces both quantitative and qualitative mitochondrial changes as has been previously suggested. 10 rats were subjected to 10 wks endurance training and meas were made on 2 hindlimb muscles: plantaris and soleus. Linear regression correlation coefficients (Pearson's r) and coefficients of determination (R^2) were used to anal the relationships between enzymatic activity and flux rates. Positive r between flux rates and CS and SDH were observed in the untrained muscles, suggesting that these enzymes may be used to estimate flux rates. However, following training, only the activity of CS in the soleus muscle was found to correlate with flux rates. The observed decrease in proportionality supports the concept that training induces a qualitative change in mitochondria. This contention that adaptive changes have a qualitative component was also strengthened by the observation of a disproportionate increase in the activities of HAD and KCT in comparison to other mitochondrial enzymes and cycle flux rates. These results question the use of CS and SDH as predictors of flux rates in the trained state.

253. FAVERO, T.G. The ability of sarcoplasmic reticulum to regulate intracellular calcium following a fatiguing bout of exercise.
PhD in Physical Education, 1990. (G.A. Klug)

The primary role of sarcoplasmic reticulum (SR) in skeletal muscle is the regulation of intracellular free Ca2+. By release of Ca2+ in response to t-tubule excitation and its subsequent sequestration by a membrane-bound ATPase, SR controls Ca2+ fluxes within the myoplasmic milieu. Previous experimentation has shown that prolonged exercise or increased muscle activity alters the normal function of SR by reducing the rate and capacity of uptake as well as the Ca2+-ATPase activity. To date, no mechanisms for this dysfunction have been identified nor have the effects of exercise on the kinetics of Ca2+ release been examined. The characteristics of the membrane and the structure of the ATPase are critical factors in the regulation of SR function. Thus, membrane fluidity, sulfhydryl content (SH), and Ca2+-stimulated ATPase activity at varying temp were assessed in SR vesicles isolated from rat gastrocnemius muscle following a single bout of prolonged exercise. In addition, Ca2+ uptake and the kinetics of Ag+-induced Ca2+ release were also assessed. Membrane fluidity as described by fluorescence anisotropy was not diff between the exercise and control samples. Conversely, Ca2+ stimulated ATPase activity was consistently attenuated by the exercise bout throughout the temp range of 22-45°C. These data suggest that, although temp is an important regulator of ATPase activity, it does not directly contribute to its decline via a mechanism involving the SR membrane. The SR ATPase contains 26 SH gps which contribute to its conformational integrity. Exp to determine the effect of exercise on the SH gps demonstrated that the amount that could be readily oxidized in vitro was 25% lower following the exercise bout suggesting an alteration in the normal structure. Treatment of the affected vesicles with the SH reducing agent DTT returned the ATPase activity to normal suggesting that the exercise-induced depression was related to SH oxidation. Ca2+ uptake was similar between control and exercise SR samples, whereas the rate of Ca2+ uptake declined concomitantly with the reduction in ATPase activity. Similarly, the amount of Ca2+ release was not diff following the exercise bout yet the rate of release declined both at 5 and 10 uM Ag+. These data suggest that alterations in the Ca2+ ATPase activity and Ca2+-transport from SR are most likely due to a chemical modification of the ATPase pump protein. They also show for the first time that the Ca2+ release mechanism is modified by the exercise bout. Considering the direct dependence of muscle contraction on intracellular free Ca2+, it is possible that alterations in SR function compromise force production and contribute to the fatigue that occurs during a prolonged bout of exercise.

254. HAYASHI, C.T. A cross-cultural analysis of achievement motivation in Anglo-American and Japanese marathon runners. MSc in Physical Education, 1991. (M.R. Weiss)

An absence of cross-cultural research in achievement motivation in sport has been identified by J.L. Duda and M.T. Allison as a void in the field. The purpose of this study was to conduct a comparative anal of achievement motivation characteristics in Anglo-American and Japanese marathon runners. Ss (N=358) completed meas examining achievement goal orientations and need for uniqueness several days prior to a competitive marathon race. Multivariate anal indicated that the Anglo-American marathon runners reported higher levels of competitiveness than the Japanese runners. Conversely, Japanese marathon runners reported higher levels of win orientation than Anglo runners. However, no gender or interaction effects were found. These results suggest that cultural differences do exist on achievement motivation indicators among competitive-sport participants, and thus also result in lending support for the notion that cultural factors should be considered more frequently in sport motivation research.

255. JAMES. C.R. Effects of fatigue on mechanical and muscular components of performance during drop landings. MSc in Physical Education, 1991. (B.T. Bates, J.S. Dufek)

The purpose of the study was to investigate fatigue effects on relationships between selected vertical ground reaction force (GRF) variables and integrated electromyographic (IEMG) data from 7 lower extremity muscles. Selected temporal and force meas and amounts of IEMG activity were utilized to predict first (F1) and second (F2) max GRF values. 5 M Ss each performed 30 normal (C1) and 30 fatigued (C2) drop landings onto a dual force platform system (1000 Hz), while EMG activity was simultaneously recorded (1000 Hz). Repeated meas ANOVA results revealed no sig diff between conditions for the GRF or IEMG variables when data were collapsed across Ss. Single S ANOVA results indicated differential S responses for all variables except F1 which exhibited a magnitude increase for C2 for all Ss. Regression results revealed inconsistent predictions of F1 and F2 between Ss, variables, and conditions. Models incorporating EMG and GRF variables provided the best F1 and F2 predictions. The vastus medialis (VM) provided the best predictions for F1 and F2 for C1, while the VM and gastrocnemius (GA) provided the best predictions for C2.

256. LARIVIERE, J.A. The effect of ice immersion on joint position sense. MSc in Physical Education, 1990. (L.R. Osternig)

The present study was designed to determine the effect of ice immersion on ankle joint position sense. 31 Ss (X age = 21.4 ± 2.1) with healthy pain free ankles were examined. 3 diff pretest treatments of 20 and 5 min of ice immersion and no ice immersion were admin prior to ankle joint angle replication at 2 test angles. Ss completed 8 repositioning trials (4 at each test angle) following each ice immersion treatment. The 3 ice treatment variables and the 2 angle variables formed 6 exp conditions. MANOVA anal revealed no statistically sig diff between conditions or trials. Additional ANOVAs revealed no sig diff between order of pretest ice immersion treatments or gender effects. Pearson product-moment r anal revealed 4 statistically sig relationships between conditions. In this study the ice immersion treatments did not differentially affect joint position sense in the ankle.

257. MANCHESTER, D.L. Effects of age, velocity, and added mass on postural adjustments associated with a rapid arm-raising movement. PhD in Physical Education, 1990. (M.H. Woollacott)

Effects of age, velocity, and added mass on postural adjustments associated with a rapid arm-raising mvmt were studied. 16 older adults (mean age = 70.6) and 16 young adults (mean age = 26.9) performed horizontal arm flexion at the shoulder during stance. All Ss performed the mvmt at individual max velocity (MAX condition), at 75% of max velocity (M75), and at 50% of max velocity (M50), as well as with added mass (WTD condition). Timing lights monitored mvmt times, while an accelerometer on Ss' wrists monitored mvmt onsets. EMG responses were recorded for the contralateral erector spinae, ipsilateral and contralateral hamstrings, and contralateral quadriceps (postural muscles), as well as anterior deltoid (voluntary muscle). Simple RT to a visual stimulus was meas. In older Ss, the erector spinae were activated after the anterior deltoid, sig later than young Ss ($p < .05$), particularly at low velocities. With the ipsilateral hamstrings, a larger proportion of older Ss than young Ss showed delayed onsets. Thus, the postural-voluntary latency was shortened. In the contralateral hamstrings, latencies were longer in the low-velocity conditions for both age gps. In the contralateral quadriceps, onsets were later for older Ss, particularly in the lowest velocity conditions. Quadriceps activation was infrequent at low velocities for young Ss, while older Ss activated these muscles more frequently. No sig age or velocity effects were observed for the anterior deltoid. Added mass resulted in shorter latencies and more consistent quadriceps activation. Conclusions were that (a) postural versus voluntary muscle responses were affected differently by age, velocity, and mass; (b) postural set and aging deficits affected timing variability; (c) older adults used alternative response strategies because of physical decrements or caution; and (d) anticipatory versus consecutive postural adjustments were affected differentially by decreasing velocity. A central representation of mvmt dynamics may coordinate postural and voluntary components. To the extent this representation is affected by aging, older adults may have difficulty anticipating consequences of an equilibrium disturbance and programming preparatory postural adjustments.

258. SCHOT, P.K. Analysis of bilateral symmetry of lower extremity function during landing. PhD in Physical Education, 1991. (B. Bates)

A common assumption, either implicit or explicit, in biomechanical research is that bilateral lower extremity function is symmetrical. Symmetry investigations have, however, produced equivocal results based primarily upon cyclic diagonal activities. The purpose of this study was to assess bilateral lower extremity functional symmetry during the impact phase of vertical drop landings. Vertical ground reaction forces, joint kinematics and joint kinetics of the left and right legs were simultaneously recorded during each landing performance and bilateral comparisons were made for each trial. 10 volunteer Ss (5 M, 5 F) were tested on 3 consecutive days. Each S performed 25 vertical drop landings per test session from a ht of 60 cm during which bilateral performance meas were collected (75 trials/S). Landings occurred on dual force platforms (1000 Hz) which allowed for the acquisition of simultaneous independent left-right ground reaction force records. A dual camera video system (200 Hz) was employed to record concurrent left/right sagittal plane motion. Bilateral comparisons of the vertical ground reaction force, joint kinematic (joint position and velocity) and joint kinetic (joint moment and power) records were made for the impact phase of landing. Algebraic left/right comparisons of selected magnitude and temporal parameters were calculated for each performance. 2 criteria were applied to classify discrete performance meas as symmetrical or asymmetrical: 1) the left/right mean diff had to be statistically diff from the theoretical symmetry value of 0 and (2) the percentage of left/right directional diff had to be equal to or greater than 80%. Temporal and magnitude similarities of the parameter time histories were also eval. The results indicated that some individuals exhibited bilateral functional asymmetry during the apparently synchronized lower extremity motions during the impact phase of drop landings. Bilateral functional relationships varied widely across individuals and parameter types. Selected asymmetries were demonstrated by all Ss, individually ranging from 18 to 58% for all parameter comparisons indicating considerable bilateral diff. The proportion of asymmetries identified within each data type was 47, 41, and 21% for vertical ground reaction force, joint kinematic, and joint kinetic variables, respectively. Evaluation of the modulation of asymmetry over blocks of trials and across test sessions indicated that the individual asymmetrical or symmetrical bilateral functional relationships were consistent.

UNIVERSITY OF SOUTHERN MISSISSIPPI (W.H. BUMGARDNER)
HATTIESBURG, MISSISSIPPI

259. BELCHER, R.K. Effects of upright posturing on selected hemodynamic parameters at twenty-four hours post coronary artery bypass surgery. PhD in Physical Education/Exercise Physiology, 1991, 85 pp. (T. Boone)

The purpose of this study was to determine the effects of upright posturing (30° upright) (UP) for 6 hrs immediately following surgery on selected hemodynamic parameters at 24 hrs post coronary artery bypass (CABG) surgery. The specific parameters were: oxygen consumption index (VO2), HR, cardiac index (CI), stroke volume index (SVI), oxygen saturation (SaA2), mixed venous oxygen saturation (SvO2), mean arterial pressure (MAP), and systemic vascular resistance index (SVRI). 8 Ss were placed in a supine position (control gp) for 6 hrs and 8 Ss were placed at 30° upright (treatment gp) for 6 hrs. At 24 hrs post CABG surgery, selected hemodynamic meas were taken. The data were anal using two-tailed t tests to determine the sig diff ($p < 0.05$), if any, between the two means. No sig diff were found in any of the data except CI where the control gp demonstrated a CI of 3.01 L.min.m2 and the treatment gp a CI of 2.47 L.min.m2. This diff was attributed to the sig diff in Q based on the mathematical calculation of HR times SV. Both HR and SV in the 2 gps, however, did not diff sig. These findings indicate that the intervention of UP did not alter sig the hemodynamic parameters meas at 24 hrs post CABG surgery. The results of this investigation suggest that either supine position or UP are comparable with regard to hemodynamic stability during the first 6 hrs in the post CABG surgery patient.

260. BROCK, S.C. Cardiovascular response during postural changes which includes twenty minutes of vertical head-down ankle suspension. PhD in Physical Education, 1991, 101 pp. (T. Boone)

The purpose of this study was to determine the CV adjustments to 3 distinct body positions plus assess the Ss' short-term CV adjustments during a 20-min period of head-down ankle suspension. 15 Ss participated in this study (with a mean age of 23 yrs). The meas included absolute and relative VO2, HR, SV, Q, cardiac index (CI), stroke volume index (SVI), SBP, and systemic vascular resistance index (SVRI). The data were anal using ANOVA with repeated meas (followed when statistical sig was found by the Tukey post-hoc test). The data in this study are presented as means (m) ± SD. With respect to VO2 and SBP there were no sig changes across the 8 data periods (which included 3 min of upright standing, 3 min of supine, 5th, 10th, 15th, and 20th min of suspension, and 3 min each of supine and standing). This study found: (1) no statistical diff in VO2 with postural changes; (2) statistically sig decrease in HR during supine and vertical head-down suspension when compared to upright; (3) statistically sig increase in SV and SVI during supine and vertical head-down suspension when compared to upright; (4) statistically sig increase in Q and CI during supine and during the 5th and 15th min of suspension when compared to upright; (5) statistically sig decrease in a-VO2 diff during supine and vertical head-down suspension when compared to upright; (6) statistically sig decrease in SVRI during supine and vertical head-down suspension when compared to upright; and (7) no statistical diff in SBP with postural changes.

261. CRAIG, SR., J.M. The effects of academic games on the attitude toward school of third grade black males. EdD in Physical Education, 1990, 129 pp. (J.W. Larson)

The purpose of this study was to investigate the influence of teaching through the acd game method on the attitude toward school of the black M. All students, 112 black M, from 2 New Orleans Public Schools, were enrolled in the regular prog, and identified as being at high-risk (61) or low-risk (51) for acd failure by their teacher. 3 classes received instruction through the acd game method in only one content area, science, math or language arts. One class received all 3 content areas through the acd game method. 4 parallel classes received instruction through the traditional method. All content areas received instruction 30 min a day, 5 days a wk, for a period of 12 wks. All games were constructed so as to parallel the lessons taught in the traditional classes. The data for Hypotheses 1, 2 and 3 were anal by two-way ANCOVA. Hypotheses 4, 5, 6 and 7 were anal by a one-way ANCOVA, and Hypothesis 9 was anal using multiple regression, with a p >.05 rejection level. No sig was found when students received instructions in science (F=1.02, df=1/27, p=.32) and math (F=1.05, df=1/28, p=.32), and language arts (F=1.69, df=1/29, p=.20) through the game method. A sig was found when students received instruction through the game method in all 3 content areas (F=8.28, df=1/26, p=.008). No sig diff was found between family structure and no. of persons in the household (F=43, df=1/108, p=.73). The statistical results indicate that the acd game method is a successful way to teach when using several content areas over long periods of time.

262. LIM, Y.A. The effects of mental training program and a mental and physical training program on cardiorespiratory responses during rest. PhD in Physical Education, 1991, 119 pp. (T. Boone)

Physiological benefits and/or changes during rest following regular participation in physical activity or in a mental exercise using diff relaxation techniques have been well established. The question remains, however, whether the incorporation of a mental exercise into a physical training prog will engender similar and/or better physiological responses during rest following a regularly instructed physical or mental training prog. Therefore, the purpose of this study was to compare the effects of 2 training protocols, one which used both mental and physical training (Gp I) and one with only mental training (Gp II), on cardiorespiratory responses during rest following one month of training. Gp I (n=9) and Gp II (n=9) were both trained for 12 alternate days before the testing of treatment effects. The testing protocol followed a Control-Treatment-Control$_2$ (C_1-T-C_2) design in which the Ss were to initiate the elicitation of a self-synchronized cardiorespiratory regulation (SSCR) procedure during the Treatment period; and without eliciting the SSCR procedure in the 2 control periods. The dependent variables that were investigated included VO_2, HR, respiratory frequency, Q, arterio-venous O_2 diff, and double product. A 2 x 3 gp by trials ANOVA with repeated meas was followed by Tukey's HSD test to determine sig diff between the treatment mean and the control means ($p < 0.05$). Statistical anal indicated that there were no sig F-ratios found in the trials of VO_2, HR, respiratory frequency, and arterio-venous O_2 diff. Statistically, nonsig F-ratios were found in trials of Q and double product. A post hoc Tukey's HSD test demonstrated that the elicitation of the SSCR procedure resulted in sig decreases in VO_2 and arterio-venous O_2 diff between the 2 control periods. Statistically sig decreases were found in HR, and respiratory frequency between (T) and (C_2). This study indicates that the effects of 2 diff training protocols on cardiorespiratory responses during rest were similar, and that the statistically sig changes during treatment were probably due to the effects of mental training using the SSCR procedure. In addition, this study concludes that it might be possible to voluntarily control the HR response through a regular and systematic practice of the SSCR procedure.

263. WASHAM, M.C. Response of select serum enzymes to carbohydrate supplementation during prolonged exercise. PhD in Physical Education, 1990, 94 pp. (W.R. Thompson)

Serum alanine aminotransferase (ALT), serum creatine kinase (CK), and blood glucose were observed in healthy M aged 18 to 25 yrs during the course of a one-hour bout of cycle ergometry at 75% of maximal HR. The Ss were given either a placebo or a carbohydrate supplement solution during the course of 2 exercise sessions. The data demonstrated a sig increase in ALT during the placebo session, and no increase during the carbohydrate supplement session. Sig increases were also observed in CK from pre- to post-exercise during both the treatment and control sessions. Blood glucose levels increased sig during the treatment session, and decreased during the placebo session. There were no statistically sig correlations between the diff in ALT and the diff in glucose in either session. These data demonstrate that induced hypoglycemlia may have an effect on serum ALT activity levels during long-term cycle ergometry. These data also indicate that serum CK elevations after prolonged cycle ergometry may not be a delayed event, and that carbohydrate supplementation may maintain blood glucose levels during prolonged cycling.

UNIVERSITY OF TENNESSEE **(M.J. PAUL)**
KNOXVILLE, TENNESSEE

264. PEIN, R.L. The effect of different frequencies of model presentation on the acquisition, retention, and transfer of an applied motor skill. PhD in Education, 1990, 120 pp. (C.A. Wrisberg)

60 Ss (44 M, 16 F; ages 18-40) were assigned to 3 gps and received diff frequencies of model presentation during 3 days of acquisition trials of the badminton long serve. Frequency schedules included a) one observation of the model at the beginning of Day 1 (OT), b) observation of the model prior to every acquisition trial (ET), and c) observation of the model whenever desired (SS). A fourth gp (TC) received acquisition trials on the badminton short serve and was used as a transfer control condition. ANOVA procedures were performed on accuracy and form scores for acquisition, retention, and transfer trials. Transfer consisted of trials of a) the long serve hit into the service court opposite that used during

acquisition (TT1), and b) the short serve (TT2). The results suggested that a) increased frequency of model presentation enhanced the learning of form early in acquisition but that timing of model presentation was as important as frequency in later acquisition and in retention of accuracy and form; b) timing of model presentation was as important as frequency on accuracy and form in transfer to a similar skill (TT1); and c) timing and frequency of model presentation enhanced accuracy while frequency enhanced form in transfer to a dissimilar skill (TT2).

UNIVERSITY OF TEXAS (A.M. BAYLOR)
AUSTIN, TEXAS

265. KIM, Y. Paths to addictive behaviors: Effects of socioeconomic and demographic variables, and acculturation on addictive behaviors. PhD in Health Education, 1990. (N.H. Gottlieb)

It is necessary to understand the social and cultural mechanisms underlying smoking, alcohol, and marijuana use among Mexican Americans in order to plan public health policy or prog for this population. Gender, SES (i.e., educ, income, occupation), and acculturation are variables which reflect mechanisms by which socialization influences these behavior patterns among this population. Thus, this study investigates the effects of individual diff on addictive behaviors including the relationship of socioeconomic-demographic variables logically related to each addictive behavior as they influence the behaviors through the intervening variable of acculturation. Demographic variables include age, marital status, and size of place where individual is residing. The anal used data for Mexican Americans from the U.S. Hispanic Health and Nutrition Examination Survey. It is hypothesized that there are gender diff among addictive behaviors in both their prevalence and their role in multivariate explanatory models. To test these hypotheses, structural equation modeling with latent variables is used to represent the hypothesized model, in which income, educ, age, and residence comm size influence the addictive behaviors through acculturation. This model also hypothesizes direct influences of income, educ, age, and size of place on the addictive behaviors. From the results of the LISREL VI anal, the hypothesized model fits these data, with the goodness of fit being better for F than M. Fs' addictive behaviors are more strongly influenced by acculturation than by the other socioeconomic and demographic variables. However, the socioeconomic and demographic variables influence Ms' smoking and alcohol behavior more strongly than acculturation.

266. OZIAS, J.W. Influence of parental health beliefs on follow-through on school nurses' spinal screening referrals. PhD in Health Education, 1990.

This exploratory study examined parents' health perceptions and modifying factors for associations with referral completion from school-based screening for spinal curvature in students ages 11 to 15 yrs. The retrospective survey design utilized a questionnaire based on the Health Belief Model. Ss were 100 mothers and fathers in 3 TX school district comm who completed and returned a mailed questionnaire. The dependent variable was membership in one of two referral follow-through status gps. Referral follow-through was defined as securing an examination for one's child within 3 mos of a referral for possible spinal curve. 30% of the respondents self-reported no follow-through action. The independent variables were: demographic factors, social contacts, resources for medical care, knowledge about spinal curve, contacts with school nurse as cues to action, and selected health beliefs. Internal consistency of health belief meas, i.e., seriousness of spinal curves, benefits of follow-through, and barriers to action, was calculated with Cronbach's alpha coefficient. Reliability coefficients ranged from .570 to .648, considered modest for exploratory work. Chi-square and t tests identified associations between follow-through status and non-belief variables. Follow-through on spinal screening referrals was associated with advice from family or other social contacts to act promptly, having a usual source of medical care for checkups, greater comparable worry about a possible spinal curve, greater sense of urgency for the referral compared to other family needs, the child's overall good health status, and agreement with previous referrals by school nurses. The belief variables and the factors associated with follow-through gp membership were utilized in a stepwise discriminant function anal to attempt to distinguish between the 2 referral outcome gps. Two factors, perceived comparable urgency and the child's overall health status rating, correctly classified 73% of the cases. Correct classification of non-follow-through was 86%. The health beliefs failed to enter the anal due to insufficient sig. Findings suggest directions for a prospective inquiry to predict the likelihood of parents' actions to complete school nurses' screening referrals within 3 mos. Alternative models to guide study design are considered.

267. PARRISH, JR., D.R. Effects of endurance and interval training on membranes of regionally isolated mitochondria from rat hindlimb muscle. PhD in Physical Education, 1990. (R.P. Farrar)

This study was designed to determine the membrane composition of skeletal muscle mitochondria isolated from the subsarcolemmal and intermyofibrillar regions of the cell. Second, the effects of endurance and interval training on membrane lipids and metabolic parameters were examined in the 2 mitochondrial regions. The metabolic parameters included mitochondrial protein content, state 3 respiration rates, and RCR or ADP:O ratios. Membrane composition was examined in terms of total lipid and chol content, and individual concentrations of phospholipid, fatty acids and molecular species. Following both modes of training mitochondrial protein yield increased in both regions. Similarly training increased state 3 in the IMF region with both substrates (pyruvate-malate, palmitoyl-l-carnitine), although the SS region increased only when palmitoyl-1-carnitine was the substrate. There were no diff in the RCR of ADP:O ratios. Although there was a two-fold greater concentration of total lipid and chol in the SS region compared to the IMF region, this diff remained consistent between regions and was unaffected by training. Training, however, did produce shifts in fatty acid composition in all the phospholipids except phosphatidylethanolamine. These changes, as were those for shifts in molecular species, were similar for both types of training and across both mitochondrial regions. The overall effect for fatty acids and molecular species was a shift towards longer chain fatty acids and a higher degree of unsaturation. The results of this study demonstrate endurance and interval training are associated with alterations in both oxidative capacity and membrane lipid profile of skeletal muscle mitochondria isolated from distinct regions of the cell.

UNIVERSITY OF WATERLOO (B. SMALE)
WATERLOO, ONTARIO

268. COPPOLA, D. Joint decisions for recreation involvement: Role specialization in pre-retirement couples. MA in Recreation, 1990.

Decisions about leisure involvement frequently involve some form of joint decision-making, yet few studies have utilized choice theory to examine the method by which individuals select leisure activities. This study utilized a consumer model of decision-making to examine how couples made decisions when planning for leisure during retirement. Of special interest were the decision-making roles husbands and wives adopted when making joint decisions about leisure involvement. Respondents described the general decision process as a joint endeavor of the couple. However, when specific leisure decisions were examined, husbands dominated some while others were dominated by wives. Only a few decisions were true "joint" decisions. The research findings have implications for recreation service providers, particularly in the areas of program design and marketing strategies.

269. DANCHUK, G. An alternative strategy to leisure related data analysis: An exploratory study of the E-R approach. MA in Recreation, 1988.

The multi-faceted nature of leisure research is identified as an area where exploration of alternative strategies is necessary. An emphasis on standard, traditional, survey response data anal approaches has impeded theoretical dev within the field. Technological dev have provided researchers with the potential for exploration of alternative data anal approaches. The Entity-Relationship approach to logical database design allows flexible and adaptable manipulation of textual data. Previously, it was necessary to numerically code textual data for manipulation purposes within computerized statistical packages. Two approaches to analyzing collected survey response data are undertaken. The traditional statistical package approach is represented by use of SPSSx and the E-R approach is depicted through use of ZIM. It was found that the E-R approach provided a more useful interpretation of textual survey data. However, numerical data were handled more appropriately by the traditional method. It is recommended in the study that subsequent research is necessary to further explore the use of the E-R approach as an analytical tool in dev of leisure related theory.

270. EKER, G. Leisure and lifestyle in selected writings of Karl Marx: A social and theoretical history. MA in Recreation, 1990.

Karl Marx's economic, political, and social theory has its own distinct and special account of the role of free time and leisure in pre-capitalist, capitalist, and communist societies. It also has a special conception of human nature in terms of the nature of all human beings in a capitalist society. There are both indirect and direct statements on free time and leisure in many of the writings of Marx. Many of these statements are both partial and incomplete. These statements, although they do not provide a full anal, provide a framework for an early Marxist theory of free time and leisure in various types of societies. There presently exists no one source that has attempted to bring together for anal and discussion a large number of the collected statements on free time and leisure that were presented in a selection of Marx's early and later writings. This thesis is the first scholarly work to do so. There are numerous indirect and direct references to free time and leisure that appear in 11 of Marx's works written between 1843 and 1880. For Marx, the role of free time and leisure in society was at least partially determined by the position of the individual in society, which was in turn determined by his or her place within the labour force and his or her social class and social status. This was based upon relationships of private property and ownership of the means of production. When Marx's early and later writings on free time and leisure are viewed together, they provide a historical and theoretical account of the position of the individual in society in terms of what constitutes such a position, what causes such a position, and how such a position can be improved.

271. EMARD, M.R. Religion and leisure: A case study of the role of the church as a provider of recreation in small Ontario communities. MA in Recreation, 1990.

This study examines both the historical relationship between religion and leisure as well as the current role of the church as a provider of rec. The historical description was accomplished primarily by using secondary sources. Specific information was gathered in regard to the provision of rec activities by churches in small Ont communities. The data concerning the current role of churches in regard to leisure were collected through the use of a questionnaire which was mailed to 214 church leaders in 30 randomly selected towns (having a population between 2,000 and 15,000) throughout the province of Ont. Religion and leisure have had a long standing relationship throughout the ages. The role of the church vis-a-vis rec has, for the most part, been one of regulating leisure patterns and lifestyles. By the 19th century, the church began to realize that its attempts at curtailing society from engaging in rec diversions were futile. It is at this time that religious denominations attempted to re-evaluate their attitudes and beliefs toward leisure. By the end of the 19th century, the more liberal churches started to perceive themselves as providers of "wholesome" rec pursuits for their church members. The 20th century witnessed a proliferation of church rec prog. However, faced with increased involvement of the public and commercial sectors in the provision of rec and the decline of church attendance, leisure activities offered by the church decreased. Recently, there has been a resurgence of churches becoming actively involved in providing a variety of rec activities for their church members, and when appropriate, for the whole comm. Congregation members play a sig role in the provision of church rec by offering most of the activities. Furthermore, churches seem to consciously plan and prog their activities. The majority of churches cooperate with other organizations in providing their rec prog, however, few have established formal and/or informal agreements with the rec dept of the comm. It appears that church leaders view rec in a pos manner and favour the church's involvement in such activities. Several church leaders, however, did not necessarily view themselves as providers of rec opportunities.

272. FISHER, K. The Canadian litigation climate and factors affecting the decision to claim compensation for injuries in a recreational setting. MA in Recreation, 1989.

The objectives of this study are (1) to understand the present status of Canada's litigation climate, and (2) to systematically evaluate factors which may "push" an individual to make a decision to sue. The first objective was pursued by looking at the Canadian rec lit, by interviewing rec personnel from 5 cities and towns in the province of Ont, and by interviewing a general insurance agent whose company insures numerous municipalities in Ont. These 3 sources provided a mixed view of whether there exists a litigation crisis. The second objective was achieved by first identifying 19 "factors" thought to be possible variables that may play a role in the decision making process leading to a claim for compensation if injured in a rec setting, and choosing 6 of these factors: (1) Loyalty to provider, (2) Participant competence, (3) Provider's concern, (4) Waiver, (5) Financial status of provider, and (6) Accident history of provider, to empirically test. Univ students (N=256) responded to hypothetical stories about an accident and subsequent injury.

273. HARWOOD, M. Recreation, rehabilitation, and the leisure independence of head injured adolescents. MA in Recreation, 1990.

Adolescents strive to achieve independence in many domains (e.g., cognitive, physical), and the one area in which they have the most perceived freedom and control is in their leisure. Should a severe trauma, such as a head injury, occur during adolescence, it can interrupt and modify the individual's normal dev. In this thesis, a conceptual model is offered that proposes 3 possible scenarios following rehab of the head injured adolescent. The 1st scenario assumes that the dev process continues following departure from the formal rehab prog. The 2nd scenario maintains that the adolescent simply maintains the level of leisure independence established at the end of rehab. In the 3rd scenario, the adolescent experiences a decline in the level of his or her leisure independence established at the end of rehab. Which of these scenarios presents the dominant pattern among head injured adolescents is not well understood because of a lack of post-rehab research. The purpose of this study is to examine the level of re-establishment of the leisure independence of head injured adolescents following rehabi. In order to dev pre-injury to post-rehab profiles of the head injured adolescents, 3 phases of data collection were undertaken, drawing in part on the procedures dev by the Hugh MacMillan Rehabilitation Centre. The data were collected through secondary sources and personal interviews and were organized to reflect the chronological progression from pre-injury through rehab to post-rehabi and to provide the basis for meas of independence and a leisure profile of the head injured adolescent. Findings were compared to the conceptual model to determine which scenario characterized the process, and possible other factors contributing to the process, and departures from it, were identified. 15 of a possible 26 adolescents were included in the study — 8 M and 7 F ranging in age from 14 to 21 yrs (mean=17). All participants were ambulatory, verbal, and had no severe visual or auditory impairments. The more dependent adolescents tended to identify more passive pursuits (e.g., watching TV) during post-rehab than did their less dependent peers. Social contacts also were notably affected by the severity of the trauma. The adolescents (47%) whose families described themselves as "active participants" in their leisure tended to have more independent leisure profiles than before the head injury. Diminished social skills and limited physical abilities were listed most often as barriers to the adolescents' greater rec involvements. Empirical evidence provides some support for the conceptual model but no one scenario appeared to typify post-rehab. The decline in the social contacts following discharge suggests the need for social skills training.

274. HUTCHISON, J. Factors associated with older adults' participation in continuing education and activity patterns: A longitudinal analysis.
MA in Recreation, 1989.

This study represents a secondary anal of the "Longitudinal Study on Aging" (n=2000) which is a 20 yr longitudinal study conducted in Ont by the Ministry of Comm and Social Services between 1959 and 1979. Bivariate and multivariate statistical techniques were utilized to determine the strength and direction of assoc between (1) various sociodemographic variables and participation in continuing educ; (2) patterns of sociodemographic variables and activity patterns; and (3) activity patterns and participation status in continuing educ. This study draws on the constructs of the disengagement and continuity theories of aging. Models of participation in continuing educ such as Rubenson's Expectancy Model, Miller's Force Field Anal, and Boshier's Congruence Model as well as the General Activity Model provided additional frameworks. Bivariate and multivariate anal were conducted. Chi-square tests indicated sig assoc between participation status in continuing and earlier educ level, perceived health, income level, occupation, and employment status. Logistic regression indicated sig assoc between participation status and employment status, educ levels, and activity level. Patterns of high activity were found to have an assoc with participation in continuing educ.

275. KAY, R. Leisure motives among Chinese and Italian older adults.
MA in Recreation, 1989.

The purpose of the study was to determine the relationship between ethnic identity, gp membership, and leisure motivations. The respondents were M and F Chinese and Italian volunteers, 45 yrs of age or older, recruited from ethnic rec organizations in Metro Toronto. The Chinese and Italian language versions of the survey included Beard and Ragheb' (1983) leisure motivation scale, Isajiw and Makabe's (1982) Ethnic Identity Index, and sociodemographic meas including age, gender, recency of immigration, educ, previous occupation and income. The leisure motivation scale was factor anal using varimax rotation. The factor structure diff for the Chinese and Italian gps, which in turn diff from that reported by Beard and Ragheb. The number of factors or "motives" differed (at least for the Chinese), as well as the content of the items comprising the various factors. In addition, as age increased so did ethnic identity among the Italian elders ($r = -.29, p < .05$). The Italian F had a higher mean motive score than the M on the Competence-Mastery motive [$F(1,48) = 3.05; p<.05$]. Among the Chinese respondents, the higher their ethnic identity, the more they were motivated to seek Competence-Mastery opportunities in their leisure ($r = .29, p<.05$), and the opportunity to learn ($r = .26, p<.05$). For the Italian respondents, the higher their ethnic identity the more they were motivated by the Stimulus-Avoidance motive ($r = -.27; p<.05$) to seek leisure activities that allowed them to avoid inactivity or stressful life situations. Overall, there was evidence of an assoc between ethnic identity and selected leisure motives for the Chinese and Italian elders. The implications of those diff in motives for the provision of diff rec services for diff ethnic gps are discussed.

276. ORDUBEGIAN, L. Motivations of volunteers in short term environmental projects: A case study of the Ontario breeding bird atlas volunteers. MA in Recreation, 1990.

The Atlas of the Breeding Birds of Ontario was a massive data collection project spanning 5 yrs, 1981 to 1985. The collection of data was done chiefly by volunteers, without whose contribution this project would have been impossible. The purpose of this study was to determine the motivations of and the rewards expected and received by the volunteers who were involved as surveyors. The study examines, by way of a long interview coupled with a contingency framework, the volunteers' reasons given for participation in the project over time, from their initial involvement to ongoing involvement, disinvolvement and their potential reinvolvement. 2 gps were studied, the ave intensity volunteer and the intensive volunteer. A total of 22 Atlas volunteers were interviewed, including 17 M and 5 F. It appears that with the exception of the amount of time volunteered towards the Atlas project, this study finds little diff between the intensive and ave intensity respondent. Generally, the Atlas volunteers were often recruited, or actively sought the Atlas project. The respondents' attitudes towards nature and their birding preference were factors which influenced initial involvement and continued to be an influence throughout involvement. No respondent cited only 1 motivation or reward for getting involved with the project nor did 1 motivation or reward induce them to stay. Situational forces, such as time and geography, also influenced the volunteer. When examining the rewards expected and received by the respondents, most valued the intrinsic rewards. External rewards generally were not expected initially, but some respondents, notably those who volunteered their time as regional coordinators, did come to expect some kind of tangible reward at the end of the project. Although few disengaged their involvement before the end of the project, disinvolvement processes had begun in some cases, with involvement actually maintained. As for reinvolvement, most Atlas volunteers would be willing to get involved in an updated version of the Atlas. Although a qualitative study is a long and involved process, the framework and processes used in this research proved an effective approach for studying an area with little previous research.

277. SCHIEVEN, A. A study of cycle tourists on Prince Edward Island. MA in Recreation, 1988.

Participation in bicycling has increased rapidly over the past decade. This increase in the activity of bicycling has led to a corresponding increase in cycle touring vacations. Since there has been little research conducted on bicycling as a form of tourism in Canada, an exploratory study was undertaken using PEI as the study site. Data were collected via a self-admin questionnaire which was distributed to cyclists on PEI during Aug 1987. 115 questionnaires were collected and used for anal. Responses to the questionnaire provided information concerning: the demographic characteristics of cycle tourists; motivations for cycle touring; the style of touring; the type and extent of planning undertaken; satisfaction of cycle tourists with PEI; and the importance of the actual exp of cycling relative to participation in other activities at a particular destination. Based on the results of the survey, recommendations were made for possible improvements to enable PEI to successfully incorporate cycle touring into their tourism industry. Primary among these recommendations was the viability and desirability of focusing on this segment of the tourism market.

278. SHIMIZU, J.K. Tourism forecasting and the Delphi technique: A case study. MA in Recreation, 1988.

This study examines the relative strengths and weaknesses of the Delphi technique as a forecasting model, and attempts to determine the accuracy of predictions made with the Delphi technique. Special reference is made to market predictions. The study looks at various quantitative and qualitative forecasting techniques and compares these to the Delphi technique. To determine the accuracy of the Delphi technique a comparison of predictions made in 1976 in the Tourism in Canada-1986 study and actual figures in 1986 were used. Percentage differences were calculated where possible. Personal interviews were conducted to gather information on the qualitative forecasts in the Tourism in Canada-1986 report, the utility of the Delphi technique, and tourism forecasting. Results indicate that the types of forecasts used in the Delphi technique are often qualitative in nature and diff to meas. One questions the true forecasting nature of the Delphi technique, realizing its limitations in tourism forecasting. The technique is viewed as an important part of the planning process. The thoughts generated through the Delphi technique are seen as more useful than the actual outcome.

279. SHIPSIDES, A. Choosing options of work reduction: Perspectives of the Canadian workforce. MA in Recreation, 1988.

This study was a secondary anal of the "Canadian Survey on Work Reduction." The data used (n=15,830) were nationally representative of the Canadian working population. From this sample a subsample (n=4,847) was drawn of respondents who chose to reduce their work time. Anal were conducted with respect to: how respondents chose to fund their reduced work time; the relationship between sociodemographic characteristics and the chosen option of work reduction; the relationship between socio-demographic characteristics and the motives for work reduction; and the relationship between the motives and the work reduction option chosen. Findings indicated that the degree of commitment to work reduction was the only diff among funding option gps; factor anal revealed 6 dimensions of motivation—family, leisure, stress, retirement, business, and comm, which were endorsed in that order of importance; people aged 25 to 44, with high levels of income and middle to high levels of educ were most in favour of work reduction; and diff in those respondents choosing diff options for work reduction, both in terms of sociodemographic characteristics and motives were found. Policy implications and suggestions for further research are discussed.

280. SIMPSON, J. A market segmentation analysis of Japanese and Australian skier travel markets to Canada. MA in Recreation, 1989.

As the foreign travel markets to Canada become more diverse, non-traditional consumer segments are emerging such as the international skier market. This study is directed toward potential skiers to Canada from 2 countries: Japan and Australia. With the use of recent foreign pleasure travel market data (Tourism Canada, 1986 and 1988), this study considers demographic characteristics, benefits sought, and attraction preferences for 3 subgroups—actual skiers, potential skiers, and nonskiers—to distinguish between them and to gain insight into international potential skiers. Findings revealed sig diff for both countries between subgroups for marital status and age. Further, potential skiers sought diff benefits while on vacation compared to actual skiers and nonskiers. Benefits sought for potential skiers varied between countries, and varying age gps of potential skiers sought diff benefits within countries. There were few meaningful diff in attraction preferences between potential skiers and nonskiers. Japanese potential skiers found the value of vacation dollars of most importance, while Australian potential skiers found meeting people of most importance. The study concludes that potential skiers represent a viable market segment. The study also suggests further recommendations for marketing and future research possibilities.

UNIVERSITY OF WESTERN ONTARIO (J.A. MACROW)
LONDON, ONTARIO, CANADA

281. JONES, I.C. Biomechanical factors affecting height achieved by female competitors during forward and reverse dives. MA in Physical Education, 1990, 129 pp. (D.I. Miller)

Selected kinematic variables and their relation to max ht attained during the flight of 193 dives performed from the 3 m springboard by 3 gps of elite F divers were anal. Kinematic data were acquired by digitizing the video records of the 14 International, 41 Canadian National, and 10 other national divers performing 193B, 105B, 301B, and 305C dives, in 4 Canadian national competitions and one international competition . Correlation anal substantiated that max ht attained during flight was related to score for the 103B, 105B and 301B. It was confirmed that max ht attained during flight by the International gp of divers was sig greater than that of the Canadian National gp for the 103B, 105B, and 305C. The regression equations dev for each dive type explained app 50% of the variance in ht attained during flight. Sig diff between Canadian National and International gps dominated the results of the ANOVA for the selected variables by level of competition. These results led to the conclusion that technique of initiating angular momentum during the take-off may be a major factor differentiating the max ht achieved during flight of the International gp of divers from that of the Canadian National gp.

UNIVERSITY OF WISCONSIN (L. MCNETT)
MADISON, WISCONSIN

282. RIVERS, O.S. The changes in composition, function, and aesthetic criteria as a result of acculturation found in five traditional dances of the Eastern Band of Cherokee Indians in North Carolina. PhD in Physical Education, 1990. (M.A. Brennan)

Traditional means unchanging. However, as a reflection of culture, dance changes as culture changes. The intent of this study was to determine changes in traditional Cherokee dances resulting from interaction and acculturation into European culture, and to identify characteristics in the choreographic structure useful in reconstruction and future comparative studies. The Quail, Horse, Beaver, Friendship, and Eagle dances were videotaped on the Cherokee reservation in NC between 1983 and 1988. Chapter I discusses methodology and objectives in this study. The review of lit refers to previous information available on Cherokee dancing. Chapter II reviews Cherokee ethnographic and historical background prior to European contact to the present. Cultural values are discussed as they impact on the dance and are reinforced through the dances.

Chapter III describes 7 annual ceremonies practiced prior to European contact. Chapter IV discusses characteristics of the music and songs accompanying the dances. The results of interviews with informants are summarized in Chapter V indicating changes in aesthetic criteria valued by the Eastern Cherokees. Dance events currently taking place on the Qualla Reservation and changes in the function of Cherokee traditional dances are also discussed in Chapter V. Chapter VI anal the choreographic structure, identifying characteristics of Cherokee dances using the information from field data guides, labanotation scores, and hierarchy of mvmt charts. A comparison of the dances described by Speck and Broom in Cherokee Dance and Drama during their 1930s' research with the 1980s' version of the same dances notes similarities and changes. Chapter VII identifies some trends occurring in Cherokee dance today and projects areas of future research generated from this study. The appendices contain the 5 field data guides, labanotated and music scores of the 5 dances studied, illustrations of dance props, a diagram of the dance area, and questionnaire guides used in interviewing. Copies of the videotapes no. 1, 2, 3, and 4 are in the archives of the Museum of the Cherokee Indian and in the collection of the University of WI-Madison Dance Dept.

WASHINGTON STATE UNIVERSITY (K.P. DEPAUW)
PULLMAN, WASHINGTON

283. AHMAD, W. The effect of refractory period and relative humidity on exercise induced asthma. MS in Exercise Science, 1990, 57 pp. (K.P. DePauw)

The effect of refractory period and ambient environmental conditions on forced expiratory volume in one sec (FEV1) among the individuals with and without exercise induced asthma (EIA) was investigated. 32 adults were screened initially for EIA. FEV1 values were taken before and at 5, 10, and 15 min after 6 min of uninterrupted running test at 80% of predicted max HR. 6 Ss, whose pre to post exercise fall in %FEV1 was greater than 10%, served as the exp gp. The control gp was selected from the remaining Ss matched by age, gender, and ht with that of the exp gp. Data collected during the screening test were identified as Dry-1. Both gps performed a similar test, 45 min after the completion of first exercise (Dry-2). On another day the running test was performed by the same Ss around the swimming pool area (Humid). The ave temp and relative humidity of gymnasium were 19°C and 29% and that of swimming pool were 30°C and 55% respectively. Among individuals with EIA, the humid environment was found to be less bronchoconstrictive when compared to dry environment (Dry-1, Dry-2); FEV1 during the refractory period was improved during dry condition running (Dry-2).

284. CLARK, N.A. Assessing the human performance laboratory's adult fitness program at Washington State University, 1982-1989. MS in Exercise Science, 1990, 83 pp. (D. Engerbretson)

All files from Fall semester 1982 to Spring 1989 were used for anal. 740 files were examined, including 363 F and 377 M. Popular months for fitness testing were Oct and Feb. Spring had a total attendance of 443 and Fall had an attendance of 297. Ave age for all Ss was 32 yrs. Ave SBP and DBP were in the very low range. Fitness classifications determined from VO_2 indicated a large no. of Ss in the low fitness class. F ave slightly lower in fitness classification than M. Flexibility meas were in the ave range. Body comp from skinfold meas revealed a population of slightly over-fat Ss. Both M and F ave at the high end of normal %bf for their gender. In 1987, 1988, and 1989 hydrostatic weighing was used in addition to skinfold meas for determination of body comp. Hydrostatic weighing %bf ave at the low end of normal %bf for gender. In 1987, a dietary survey was added to the prog. 107 surveys were performed from 1987 to Fall semester 1989. F requested the survey 60 times while M requested it 47 times.

285. DEVLIN, D.I. Attitude toward physical activity and body image of more and less active older adults. MS in Physical Education, 1990, 96 pp. (G.M. Hulac)

The purpose of this study was to investigate diff in body image and attitude toward physical activity among more and less active M and F older adults. 51 volunteers were divided into 4 gps based upon weekly energy expenditure and gender. Ss were identified as more active or less active based upon their weekly involvement in physical activity. Kenyon's (1968a) Inventory was used to assess attitude toward physical activity along 7 dimensions, as well as to determine perceived and ideal body image. Simple descriptive statistics were used to summarize the data. The Ss in this study perceived their activity level to be higher than others their own age. The greatest inhibiting factor to physical activity was lack of time. Of the physical activities reported, gardening and walking were the most popular. The vast majority of Ss indicated watching television as a regular activity. The primary statistical tool used in this study was a univariate ANOVA. More active Ss reported sig more pos attitudes than less active Ss on physical activity as: a means to health and fitness ($p<.05$), a thrill involving some risk (vertigo) (p .05), a release of tension (catharsis) ($p<.05$), and prolonged and strenuous training (ascetics) ($p<.05$). F showed more pos ($p<.05$) attitudes than M on physical activity as an aesthetic exp. Ideal body image analysis showed a sig diff ($p<.05$) on the interaction between gender and activity level.

286. MATTAUSCH-JOHNSON, P.A. Inservice needs assessment for physical education in the overseas international school. MS in Physical Education, 1990, 106 pp. (G. Goc Karp)

The purpose of this study was to identify physical educators' needs and concerns for inservice in the overseas international schools. The Inservice Needs Assessment Questionnaire for Overseas Physical Educators (INAQO-PE) with 39 inservice topics, was designed to collect data from 137 physical educators in EARCOS and NE/SA regions. Descriptive statistics were used to summarize the data. Respondents selected fitness/wellness, instructional strategies for teaching ESL, effective teaching strategies, motivation techniques, diagnosing skill development, and self-evaluation of teaching, for inservice. Chi square anal indicated sig relationships for gender, nationality, and region affiliation and the value given to inservice content statements. Respondents indicated that although inservice was offered, needs assessments were not admini at most schools and content was determined by administrators. Findings from this study suggest that the isolation of physical educators in the overseas international schools could be decreased if inservice prog focused on the needs and concerns of the participants.

287. WANG, W. Early sport socialization of elite Chinese disabled athletes. MS in Physical Education, 1990, 71 pp. (K.P. DePauw)

59 elite Chinese disabled athletes from 7 China provinces responded to the survey of Early Recreational and Sport Experiences of Elite Athletes with Disabilities. PE teachers and self-motivation were found equally to be the most important factors initiating the interest in sports of the elite Chinese disabled athletes. Sports participation increased with age. The parents of these elite disabled athletes were found to have high expectation on both participation of their children in sports and the level they might attain at athletic competitions. The parents' supportive encouragement of their children's participation in sport might have had a pos influence on the involvement in sports for the elite Chinese disabled athletes and their attitude toward sports competition.

WEST VIRGINIA UNIVERSITY (D. BROOKS)
MORGANTOWN, WEST VIRGINIA

288. TAYLOR, S.C. The evaluation of attitude and behavior changes of participants in the Bayer Wellness Program. EdD in Physical Education, 1991.

This study was an effort to examine what effect a comm based wellness prog, the Bayer Wellness Prog (BWP), would have on attitudes and behaviors related to risk factors for heart disease. The connection between individual attitude and lifestyle behavior changes and the prevention of CV disease, plus the importance of intervention at the comm level (versus clinic-based, medical models) was the reason for the study. The BWP operated from May 1988 to May 1990 in Wellsburg, WV. It included numerous health activities-screenings, classes and seminars. A benchmark survey (6 mos prior to the start of the prog) and a follow-up survey (6 mos after the start of the prog) were previously conducted by a research firm. This study was conducted at the completion of the 2 yr wellness prog. Data were collected via a telephone questionnaire comprised of 184 questions. Admin of the survey was based on a protocol designed by the researcher; surveyors included the researcher, graduate students and volunteers. Randomly selected telephone nos. were used to complete 412 surveys of adult, Wellsburg residents over a 5 wk period. The accuracy of the recorded data was tested utilizing Scott's coefficient for interrater reliability. When the observers were compared to the criterion, or expert, the observer reliability was found to be at acceptable values for the study. The data were anal to test the null hypotheses that participants in the BWP would not exhibit sig diff attitudes and behaviors regarding 3 major risk factors of DV disease—exercise, diet and smoking—than nonparticipants of the prog. The chi-square test of independence revealed that participants of the BWP did not have sig diff attitudes and behaviors regarding exercise, diet and smoking than nonparticipants of the study. However, this project was able to demonstrate widespread change occurring in the Wellsburg comm, without relationship to formal participation in the BWP. Total respondents reported changes throughout the prog in all 3 areas, including getting more exercise, eating healthier and decreasing levels of smoking. Also, the majority of residents credited the BWP with helping them to make these changes.

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